UNIVERSITY OF OSLO

FACULTY OF SOCIAL SCIENCES

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N-0317 OSLO
Norway
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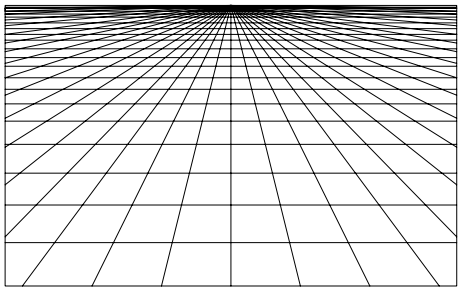

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Cosmopoles

How culture matters to innovation, urban development, and economic growth

Hans Erik Næss
University of Oslo
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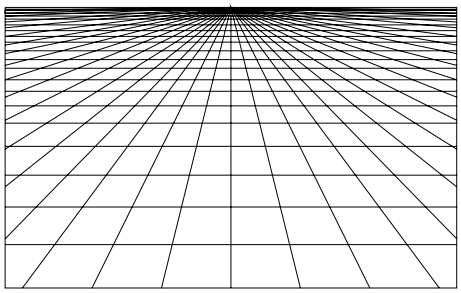

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Preface

The Story Behind

The story behind this dissertation derives from a myriad of overlapping interests. In particular I found the connections between globalization, urbanization, culture studies and innovation interesting. Combined with the educational influences of my ESST Master of Arts program at the Center for Technology, Innovation and Culture (TIK), University of Oslo, the idea of writing a master thesis on how an appreciation of cultural affairs influence the innovative performance of technopoles and economic growth seemed like an exciting and challenging endeavor.

Acknowledgements

Putting together a master thesis is a comprehensive process which requires help and support from a great number of people. First of all I would like to thank my parents, for always believing in me. I thank my brilliant supervisor at TIK, Bent Sofus Tranøy, for his tolerance and openness to my ideas, and for helping me make this dissertation better than it ever would have been without his constructive interventions.

For miscellaneous assistance, I also wish to send some thanks to my brother Thor H. Næss at St. Andrews College in Sydney, Peter Dobers at the Royal Institute of Technology in Stockholm, and Vincent Mosco at Carleton University in Ottawa; Arild B.

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Finally, I must send my dear Vibeke Hoem all my love and gratitude, for always being there for me. I owe you more than you'll ever know, and hope someday I can repay you.

All remaining errors and misjudgments are of course my own responsibility.

Hans Erik Næss, Oslo, 2004

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Abstract

Since the end of World War II different kinds of technopoles – innovative sites for high-tech R&D and manufacturing – have been clustering all over the world. But despite numerous attempts to replicate the mother of all technopoles, Silicon Valley, the outcomes have been highly diverse and even contradictory. On the other hand have a number of innovative communities embedded themselves within large cities, often owing little to conventional technopolitan policies. Why do some technopolitan regions thrive while others flounder, even those sharing a majority of similarities? Why have some technopolitan cities continued to harbor innovative environments although not being part of a defined technopole strategy? What other variables than the economic ones affect innovative performance?

Keywords: *technopoles – innovation – blending – culture – urbanism*

Chapter 1

Introduction

The realm of human affairs, strictly speaking, consists of the web of human relationships

- Hannah Arendt

The Rise of Innovation

As the New Economy emerges innovation abilities have become a key determinant in competitiveness, for nations, regions, industries, and firms. Seeking the optimal conditions for innovation is today a central strategy for every enterprise enhancing new products, processes, and knowledge. This has led to a widespread array of technological, organizational, and economic policies developed by innovation thinkers constantly trying to achieve a «best way» of handling the innovativeness of the respective enterprise.

Simultaneously, the overall picture of what innovation is and how it should be understood is becoming somewhat insurmountable. Contributions from different professions coupled with an increasing plethora of definitional jargon has made the term very slippery. Hence, for the sake of clarity, I will stay with the Schumpeterian distinction between «invention» and «innovation».[1] In everyday speech, in the media, and even within academic literature dealing with these concepts, they are often confused and used interchangeably without further clarification.[2] More precisely, I concur with the further developed definition by Narula (2003:2):

> «An invention is an idea, sketch or model of any new or improved device, product, process or system, while innovations occur only when the new product, device or process is involved in a commercial transaction».

These are although quite instrumental sides of the story. The modern nature of innovation demands a dynamic, cultural outlook to be fully understood. Conventional wisdom excluding or ignoring new dimensions of work, leisure, and everyday life, will face increasing problems as means for a competitive innovation policy.

However, an increasing number of studies and policies are gradually more emphasizing what I henceforth will refer to as «culturally informed innovation perspectives».[3] Basically, this means appreciating or emphasizing to a significant degree variables in the innovation matrix deriving from cultural characteristics. This is important because the primary impetus of creativity – the centerpiece of innovation – is cultural resources. Culture[4] is the panoply of resources mobilizing innovative efforts and creative people.

We can illustrate this development with the Germany, a country with political unrest and deep traditions in heavy industry and raw material-based production. Over the past ten years, Germany's Gross Domestic Product (GDP) has grown by an annual average of only 1.4 %, barely half as fast as growth in the rest of the European Union (EU), roughly the same pace as Japan, but way below China.[5] The newly elected German president Horst Köhler from the Freie Demokratische Partei (FDP), former Managing Director of the International Monetary Fund (IMF), an economist of profession and reputed for his utter belief in global market mechanisms and hardcore economics, stated in a speech to the German Bundesversammlung (parliament) that his dream was making

Germany into «a land of ideas», and trigger the old nation of poets and thinkers to new waves of creative curiosity and experimentation.[6]

Aims and Objectives

The need for taking cultural variables into deeper consideration in innovation theories brings us to the objects of analysis in this dissertation: the high-technology sites named *technopoles*.[7] This is quite an amorphous term, scoping several different concepts for creating innovation milieux and enhancing high-tech industries within defined regions or industries.

Briefly, we can define it as an idealized concept where research and development (R&D) facilities – such as buildings, infrastructure and technology – and a so-called «critical mass» of researchers and scientists are clustered together in a high-quality environment. Based on cross-fertilization between research, innovation and sometimes production, they function as regional levers for scientific, technological, and economic development.

Following the classification of Castells and Hall (1994), there are five different technopolitan categories; *techno-industrial complexes*, *science cities*, *science and technology parks*, *Technopolises* and *quintessential innovative milieux*.

Table 1.1 A Typology of Technopoles

Type	*Characteristics*	*Examples*
Techno-Industrial Complexes	• Built on the basis of the innovative milieu, linking R&D and manufacturing • Created out of global industrialization, without extensive deliberate planning	• Silicon Valley, California, US • Boston Route 128, Massachusetts, US
Science Cities	• Strictly scientific research complexes, with no direct linkage to manufacturing • Intended to reach a higher level of scientific excellence through synergy, with deliberate planning	• Akademgorodok, Siberia, Russia • Taedok, South Korea
Science and Technology Parks	• Aims to induce new industrial growth, in terms of jobs and production, by attracting high-tech manufacturing firms to a privileged space • Deliberately established high-tech business area, resulting from government and/or university-related initiatives	• Hsinchu, Taiwan • Sophia-Antipolis, France • Cambridge, UK
The Technopolis Program	• A set of policy instruments aimed at regional development and industrial decentralization	• All around Japan, e.g. Shinanogawa, Oita, Ehime and Kumamoto
Quintessential Innovation Milieux	• Not usually regarded as fundamental innovation milieux or archetypical technopoles, but still harboring a major share of the world's actual high-tech production and innovation	• Metropolitan areas like London, Tokyo, New York, Paris, and Kuala Lumpur

Source: Adapted from Castells and Hall (1994:10-11) and Araki (2000:5)

Since the end of World War II different kinds of technopoles have been built or clustered by degrees of deliberate planning all over the world. Symbolized by all sorts of places – from Tokyo to Zhongguancun, Adelaide to Shanghai, Cambridge to Silicon Alley, Paris-Sud to Hsinchu Taiwan, Oulu Technopolis to IT Fornebu, Nice-Sophia-Antipolis to Akademgorodok, Moscow-Szelenograd to Daeduk, and Munich to Seoul – the concept of technopolitan regions is reaching across the earth.

The icon of this development is the Californian region known as Silicon Valley, which has become a role model for almost all later attempts to create a similar phenomenon in other countries or industries. In the late 1940s, when the area was more celebrated for its oranges than silicon, the rural Santa Clara County would have seemed an unlikely candidate for symbolic heartland of a future techno-economic revolution. Yet over fifty years later, it is the concept typically invoked by policy-makers around the world as they seek to revitalize old centers of production or create new technopoles. The Silicon Valley story is by now legendary in these circles; Frederick Terman's founding of the Stanford Research Park in 1951, the establishment of the Fairchild labs in 1957, the explosion of new semiconductor firms in the 1960s, the development of the personal computer (PC) in the 1970s, internationalization and recession in the 1980s, and the 1990s renewal of the valley around high-end research and customized production (Mosco and Jackson, 1999).

But despite the numerous attempts to replicate the Silicon Valley phenomena, the outcomes of these strategies have been highly diverse and even contradictory. Many of the known technopoles that were built in the postwar years are merely ventures of

clustering reindustrialization, and not interactive, progressive and innovative communities, as intentionally planned (Castells and Hall, 1994).

On the other hand have such innovative communities increasingly embedded themselves within what Castells and Hall (see table 1.1) refer to as «quintessential innovation milieux». These are cosmopolitan cities, often with a much lower level of deliberative planning than the archetypical technopoles. A number of cities have performed just as well with regards to innovation and economic growth, and in several cases better, than the ideal type technopoles like Akademgorodok and Tsukuba. And, in addition, they have become (or maintained their image as) good places to live.

Why this pattern has emerged is difficult to tell. Historical analysis of technopolitan development offer conflicting explanations. First, we find that technopolitan projects with a large degree of instrumental similarities often perform differently. Secondly, there is also a tendency where highly different technopolitan projects have performed almost equally well (see e.g. Keeble, 1989; Quéré, 1990; Castells and Hall, 1994; Josephson, 1997; Miyakawa, 1997; Hall, 1999).

This poses several questions. Some technopolitan regions thrive while others flounder, even those sharing almost identical instrumental characteristics. How can that be? Conventional innovation economics have long emphasized instrumental innovation mechanisms in explaining economic growth. By «instrumental innovation mechanisms» I denote standardized and formalized innovation elements which are universally applicable, such as various forms of capital supply, R&D facilities, financial incentives, human capital (measured by education), management techniques, different learning processes, and basic infrastructures. These elements are well known and extensively

examined by a range of scholars (see Schumpeter, 1934; Machlup, 1962; Polyani, 1966; Chandler, 1977; Freeman, 1982; Coleman, 1988; Marks, 1990; Porter, 1990; Nonaka and Takeuchi, 1995; Edvinsson and Malone, 1997; Lundvall and Borrás, 1999; Clark et al., 2000; Castells, 2000; OECD, 2001; Narula, 2003). But still differences occur. What is the arcane X-factor?

A rewarding point made out by Florida (2004a), is while conventional economists have paid a lot of attention to how companies and even industries decide where to locate, they have virtually ignored how people do so. Florida's emphasis is based on the growing tendency of people not moving to where the jobs are, but companies (re)locating where skilled people want to live (ibid.).

This begs the question of how some technopolitan places – besides the instrumental innovation mechanisms – attract, capture and harness innovative *people*. It is reasonable to assume on a general level, like Harrison and Huntington (2001), that culture matters and values shape human progress. Technological revolutions are commonly associated with some form of cultural specifics. Such specifics have been considered as essential elements in the ability to innovate and furthermore attaching these to a territorial area (Hall and Preston, 1988; Mokyr, 1990).

But are some cultural characteristics more eligible than others in terms of enhancing economic development? Such a question invites to a dangerous walk among heated political and religious domains in a world where misunderstanding, denial, or intolerance of cultural differences are major sources to conflicts (see e.g. Eriksen, 2001; Østerud, 2002; UNDP, 2004). It is obvious that cultures never can be placed in numerical orders or be rated against each other like a comparative price index. However, by not

analyzing in detail or disfavoring cultural values which directly can be related to particular religious or political views, I hope to stay clear of such ideological entrapments.

Instead, I resume the fruitful position taken by the anthropologist Gisela Welz (2003:258), who summarizes her inquiry in three questions: Why are some places and times more likely to produce creative individuals and innovative environments? Is it possible to define an innovative environment anthropologically? What social settings make groups and individuals creative? In this dissertation, the first and third question is of particular interest.

Reader's Guide

My point of departure is to prove the need for taking cultural variables as well as economic variables into deeper consideration in future innovation theories. In chapter 2, I begin with a scrutiny of conventional innovation theories. It is necessary to point out that I am not advocating a total ignorance of conventional research done on technopoles. I'm only posing some additional explanatory factors which have to be incorporated if we are going to increase our understanding of technopolitan history.

In chapter 3, I will introduce the Creative Class-theory and its «three Ts» technology, talent, and tolerance, developed by Richard Florida, seeking to identify some of the cultural and social mechanisms that make creative people cluster and form innovative environments in certain technopoles.

In chapter 4, I seek to investigate the history of the paragon of technopoles, namely Silicon Valley. The reasons for this are firstly that this region pioneered an

innovation agenda that has been widely attempted imitated around the world, and secondly that it was one of the major inspirational sources to Florida's development of his Creative Class-theory.

In chapter 5, I take a look at some of the attempts at duplicating the success of Silicon Valley. Several of these efforts differ from Silicon Valley on some highly important matters, and I am going to investigate what these differences consist of.

In chapter 6, I present a selection of technopoles not trying to replicate Silicon Valley, mainly due to their sustained urban popularity. Without being part of deliberate technopolitan strategies, they offer through other amenities – preferably cultural – places to live which by charisma are conducive to innovation. Furthermore, I plan to show how these cultural variables blended with traditional economic variables are empirically related to innovative performance, social qualities, and economic growth.

In chapters 7 and 8, I will present two separate innovation stories from New York City and Tokyo in the 1990s, which represent historical images of my theoretical outlook. They are supposed to be real-life stories of how the blending of economic and cultural variables works together powering economic growth, and furthermore illustrate the necessity of balance between them.

Finally, in chapter 9, I try to sum up the findings from the analysis in this dissertation.

Notes

[1] Mokyr (1990:146) names this «the Leonardo problem». The 16th century genius Leonardo da Vinci had some quite advanced inventive ideas for an early type of airplane, but failed to make it a commercial product due to its lack of supporting technologies (most notably a power source).

[2] Although this separation often appears self-explanatory, it can still oppose methodological issues. For instance, Archibugi et al. (1997:16-20) have shown that from a sample of 620 innovations gathered in the SPRU database (SPRU = Science Policy Research Unit at the University of Sussex, UK), 96.9 % fall into the «grey zone», that is, they can either be products or processes, according to the type of definition adopted.

[3] This term is borrowed from Charles Landry and his book *The Creative City* (2000). After examining a handful of innovative cities, Landry concludes: «An appreciation of cultural issues, expressing values and identity, was the key to the ability to respond to change ... The recognition of a culturally informed perspective was crucial to making urban planning work» (ibid.:3).

[4] I consciously avoid defining «culture» more profound in this matter, since the history of culture studies already has been swamped with definitions. In stead, I seek – in the spirit of the great anthropologist Fredrik Barth – to investigate what kind of relations between people, place and cultural expressions actually are enhancing economic performance.

[5] "Wirtschaftsblunder", *The Economist*, February 19, 2004; see also "En reise til det brune Tyskland", *Aftenposten*, September, 26, 2004

[6] «Deutschland soll ein Land der Ideen werden. Im 21. Jahrhundert bedeutet das mehr als das Land der Dichter und Denker, mehr als 'Made in Germany', mehr als typisch deutsche Tugenden … Das ist sicher etwas ganz anderes als Großmannssucht und Selbstüberschätzung. Deutschland, ein Land der Ideen, das ist nach meiner Vorstellung, Neugier und Experimentieren. Das ist in allen Lebensbereichen Mut, Kreativität, Lust auf Neues ohne Altes und Alte auszugrenzen» (Köhler, 2004).

[7] Please see Appendix for a more detailed description of technopoles.

Chapter 2

Revitalizing Innovation Theories

Introduction

As we remember from chapter 1, some technopolitan regions have thrived while others have floundered, even those sharing a great deal of instrumental similarities. The quest of this chapter is therefore first to go through some of the conventional literature upon technopolitan development.

Secondly, I will scrutinize a specific conventional innovation theory in its treatment of innovative environments. This will hopefully make us able to identify some limitations within conventional innovation economics, and furthermore, identify what theoretical approach we should add from a culturally informed point of view.

Conventional Innovation Theories

Being innovative is all about being creative[1], and combining visionary ideas with reality. The core of modern innovation policies – in opposition to the obsolete vision of the individual genius sitting in his office, under a tree, or somewhere else suddenly discovering new things – is systematic efforts of research and development (R&D). The joined UNESCO (2001:3) and OECD definition of R&D is:

> «Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture, and society, and the use of this stock of knowledge to devise new applications».

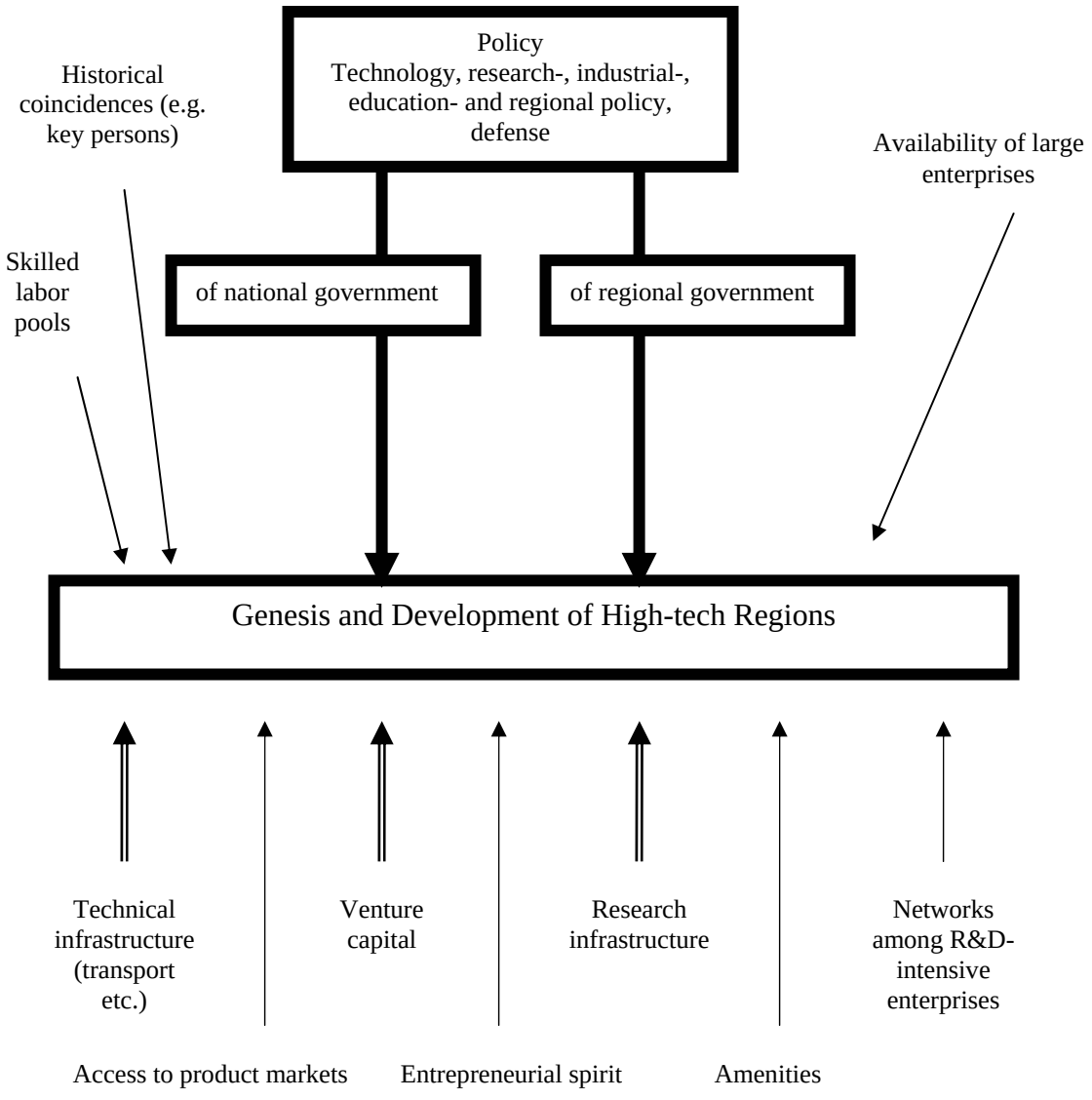
During the 1980s and 1990s the map of innovation studies went through several transformations. Recent interest in innovation processes is according to Lundvall and Borrás (1999) strongly related to studies trying to explain the new perception of the relationship between economic theory and technical change by emphasizing different aspects of innovation as a complex, interactive, non-linear process. Similarly, there has been a growth in the activities understood as innovation. An increasing accept that innovation not only comprises scientific research, but all the different steps of the process – including organizational and social aspects – until a new product or production process has been launched on the market, has influenced modern business strategies thoroughly (ibid.).

This has made contemporary innovation policies become somewhat stuck between conventional wisdom and the wish for an inclusion of new, unconventional grounds. The majority of modern innovations does not follow a systematic or preset development model, but have recursive, unforeseen and capricious forms (Freeman, 1982; Kline and Rosenberg, 1986; Fagerberg, 2003).

Some reasons for this conflict between old and new perceptions of innovation can be traced within the limitations of conventional economics (see Rosenberg, 1982; Krugman, 1995; Amin and Thrift, 2004). Factors usually marginalized by conventional innovation economists have increased their magnitude in the innovation matrix. As I stated in chapter 1, while innovation economists from Marshall (1920) to Clark et al. (2000) have focused on how and why firms and industries cluster at certain places, they

have been much less concerned why people do so. Figure 2.1, illustrating and representing the conventional view on the genesis and development of high-tech regions, may demonstrate this further.

Figure 2.1 Factors Governing the Genesis and Development of High-tech Regions



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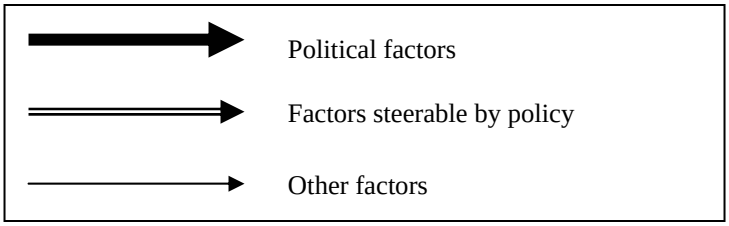
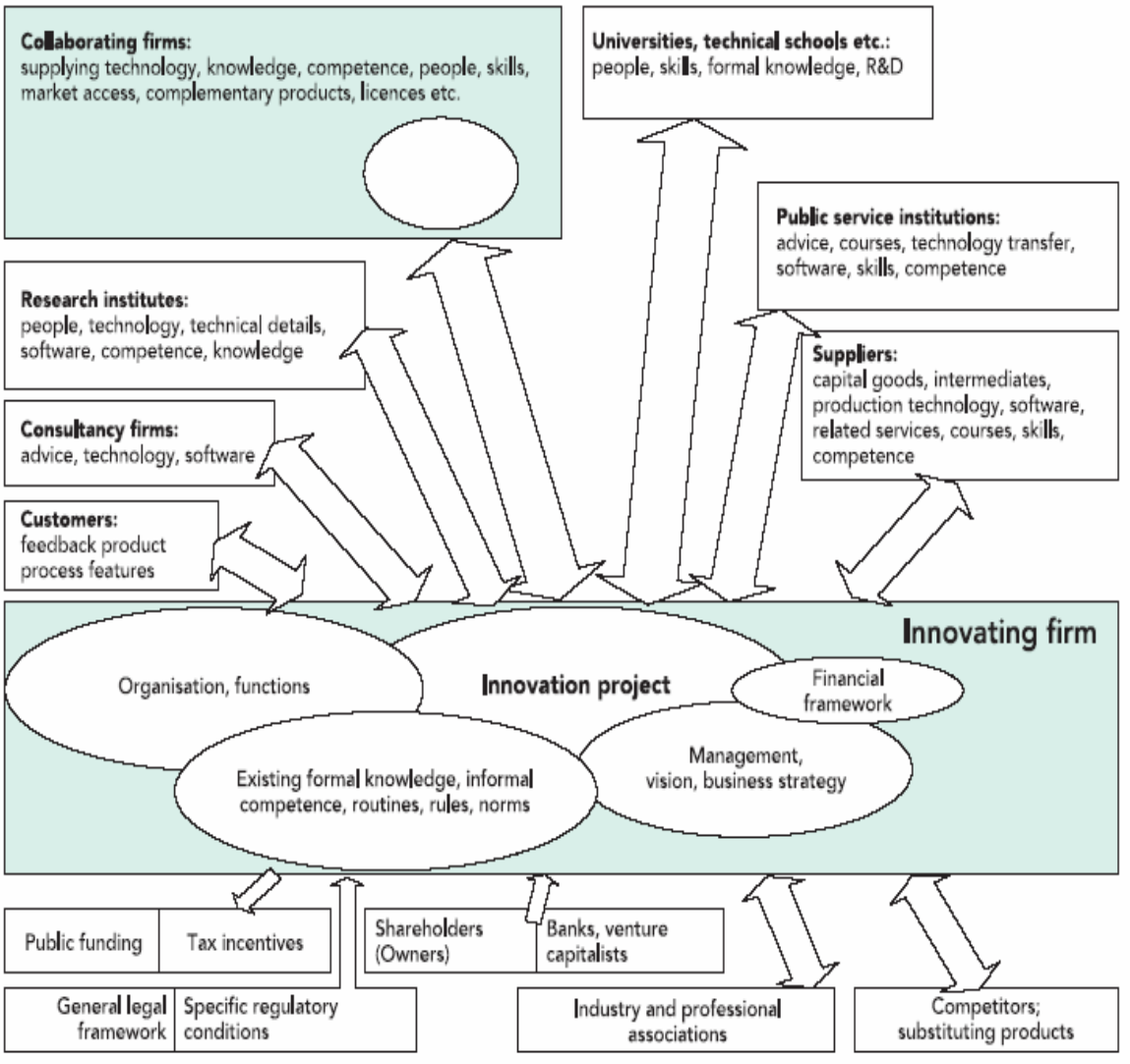


Source: Adapted from Sternberg (1996:534)

As we see from this model, there is a lack of focus upon people, besides as in bearers of skills («human capital», measured by education) in labor pools, and those being envoys of «historical coincidences». It is clear that certain industries have clustered in history for various reasons, for example the clustering of makers of disk drivers in Singapore, car manufacturers in Detroit, and computer chips in Silicon Valley.

But regions, firms, and networks are not entities that can learn, be creative or innovate (Desrochers, 2001). The real force behind such clustering is people. A more comprehensive model (see figure 2.2), hoisting the level from regional high-tech development to national innovation systems, comes a bit further in including «people» as impartial elements in the innovation matrix. Still, even in this figure people are treated as «stock» concepts, not considered as an independent group, but reduced to representatives for various institutions.

Figure 2.2 General Interactions in a National System of Innovation



Source: Iversen (2003:25)

We need a more dynamic idea to understand why creative people cluster at certain places. The underlying reason for focusing upon human resources is this: Places depend all the time more on one crucial resource – their people. Human cleverness, passions, desires, motivations, creativity and visions is increasingly replacing natural resources and heavy

machinery as economic assets. A neat aphorism illustrating this comes from the CEO of Sun Microsystems, Scott McNealy: «AT&T has Bell Labs, and we have Bill Joy [cofounder of Sun Microsystems]. We get a lot more for our money».[2]

This leads us directly to cultural circumstances, and how people's cultural and social values – non-instrumental innovation variables – come together at the nexus of place and influence its innovative abilities.

Schumpeter, Management Gurus, and the GREMI project

To say that innovation theorists have marginalized social and cultural variables is not the same as saying that they have ignored them. Even Joseph Schumpeter, one of the pioneers of innovation theory, was not a stranger to these elements, saying; «the field of individual choice is always, though in very different ways and to very different degrees, fenced in by social habits or conventions and the like» (1934:91).[3]

The main emphasis when speaking of social variables in innovation theory has however not been on individuals, but on organizations and organizational theory. The latter represents a mediating level of facilitating human capital between individuals and firms, and has extrapolated theories from unlike fields such as behavioral economics, sociological micro-interactionism, postmodern semiotics, and traditional Marxian conflict perspectives (see Hatch, 2001; Strand, 2001, for overviews). It can thus be a part of both an instrumental and a culturally informed set of innovation variables.

A field within organization theory representing the mediating level is the studies of «organizational cultures», and how these cultures seemingly are manifestations of larger structural systems in society (Martin, 1992; Schultz, 1994). Cultures as such are

contextual, geographical and historically rooted phenomena, and cannot be fabricated elsewhere (Bourdieu, 1991; Geertz, 1993). As a replacement for real «cultures», organizational ones become powerful metaphors describing the exceptional about e.g. Sony, IKEA or Ferrari. In fact, studies of organizational culture have been flooded with different metaphorical creations, organizational concepts, strategic thinking systems, and management techniques.[4] But in stead of focusing on people's interaction and their cognitive motives for action (except the studies of power, a classic sociological discipline), the leading organization thinkers – so-called «management gurus» – have emphasized the role of the manager(s) and his/hers ability to set the culture of a group (Thrift, 1996; Strand, 2001; Ridderstråle and Nordström, 2002).[5]

We can take a look at one renowned attempt of bridging these micro and macro perspectives. The European GREMI – Groupe de Recherche Européen sur les Milieux Innovateurs – project started in the latter half of the 1980s, was one of the most comprehensive research programs implemented to link innovation cultures («milieux») and technopolitan arrangements.

The major shift posed by GREMI was the emphasis on the socio-cultural elements of economic space, defined as «a relational space, the field of social interactions, interpersonal synergies and social collective action that determine the innovative capability and the economic success of specific local areas» (Camagni, 1991b:1). By facilitating a local milieu with linked spatial proximity between economic actors, dynamically acting through collective learning and synergy, it would function as a generator of innovative behavior (Aydalot and Keeble, 1988; Camagni, 1991; Crevoisier and Camagni, 2000).

But even this project has, in many respects, shown insufficiency in explaining why some technopoles are more successful than others. Most pronounced is probably the critique of Gordon and McCann (2002:2, 22-23), who writes, based on empirical studies of among others metropolitan London:

> «In general we would argue that *there is no reason to suppose that innovation is systematically maximised in any type of industrial cluster* [italics added] … there is reason to believe that claims of the significance of the informal information spillovers enabled by spatial proximity are significantly overstated».

Moreover, it involves some severe methodological issues regarding synergy, which apparently is the most profound theoretical element separating GREMI from other concepts. The concept of synergy in organizational theory was introduced by Igor Ansoff in his book *Corporate Strategy* (1965). To Ansoff, 2+2 could potentially become 5, by extracting an «innovation surplus», that is; the added value resulting not from the cumulative effect of the elements present in the milieu, but from their interaction (Castells, 2000:420-21).

At first it seems generally difficult to isolate the direct effects that can be claimed to be of synergetic heritage, or in other words; what exact synergetic variables are determining innovation surplus, and how can this be measured? Another problem for the GREMI-project was their lack of clarity in terms of the direction of causality. That is, does innovation occur because of the existence of a milieu, or does a milieu develop when there is innovation in a region? (Storper, 1995)

Maillat (1991:104) clarifies the picture modestly by saying that these combined characteristics creating milieux of innovation cannot be found in a universally applicable

archetype: «the innovative firm is not a predetermined entity within a local milieu, but is generated by the latter, with innovative behavior dependent upon variables determined by the specificity of each milieu».

The results from GREMI's research studies identifies, true enough, some connections between firms and the milieu, but are unsuccessful to track the connections between people and the milieu.

From Organization Environments to People Environments?

The very idea of an innovative milieu is despite GREMI's weak spots highly valid. But in order revitalize it, and because technopoles sharing many instrumental similarities have performed differently, we have to ask another question: What other elements than conventional economic variables shape successful innovation milieus and harness their internal qualities? That is what I am going to investigate in the forthcoming chapters.

Notes

[1] Creativity is a mysterious concept. How to spur creativity is even more mysterious. Johan Huizinga's classic *Homo Ludens* (1971) suggested that our entire civilization was built on the actions of playfulness. On a more realistic level, we might say it is a matter of dynamic interplay between the individual, the field he or she is into, and the surrounding milieu («the creativity triangle») (see Hall, 1999). Arthur Koestler's definition of creativity is also useful in this context: «a type of learning where the teacher and the pupil are located in the same individual» (Koestler, 1964). Gardner (1993), beginning with the question «where is creativity?», analyzed in a very original study the lives of seven highly creative twentieth-century individuals – Freud, Einstein, Picasso, Stravinsky, Eliot, Graham, and Gandhi. Focusing on the cognitive area (Gardner is a psychologist), he emphasizes the *asynchrony* or irregularity in the «creativity triangle» mentioned above. A form of marginality, either in gender, ethnic origin or social class, seemed to be a common denominator for all these personalities. By exploiting this marginality they actively sought to utilize their creative potential by being on the edge within the triangle of creativity; that is, be more creative because they do not fully subscribe to the dominant value system (Gardner, 1993:381-82; Hall, 1999:17).

[2] Cited in *Fortune*, February 15, 1999

[3] However, Schumpeter meant that the entrepreneur was differed from this description, since the entrepreneur was more likely to set the culture of a group than be influenced by it – almost similar, in fact, to today's management gurus.

[4] Some examples may illustrate this further: Just-in-time (JIT), business process re-engineering (BPR), management by objectives (MBO), total quality management (TQM), 24/7-innovation, management by walking around (MBWA), benchmarking, matrix management, outsourcing, strategic alliances, Toyotaism, Fujituism, downsizing, lean production, and the whole range of different learning-by-(whatever)-concepts – you name it.

[5] Akio Morita, the founder of Sony, opposed «management guruism» this way: «A company will get nowhere if all the thinking is left to management» (Morita, 1986:165).

Chapter 3

Urbanization and the Three Ts

Keep your tax incentives and highway interchanges; we will go where the highly skilled people are

- Carly Fiorina, CEO of Hewlett-Packard

Introduction

At the end of the previous chapter I asked: What other elements than conventional economic variables shape successful innovation milieux and harness their internal qualities?

This raises several questions. First, remembering our emphasis on people; where do creative people want to live? The reason for asking this is that cultural variables (identities, interaction between diverse groups, etc.) inevitably are connected to distinctive places (UNDP, 2004). If we look at the settlement pattern around the globe the past 25 years, or even the past century, we see one tendency surpassing all others: urbanization (Mumford, 1987; Drakakis-Smith, 2000; see also table 3.1). People, especially younger generations (those who in fact make up a great deal of the human element in this analysis), seek the urban life and urban living to an increasing degree, for all sorts of reasons.

Table 3.1 Urban Population Numbers by Regions

Urban population (percentage of total), 1975, 2002, and 2015			
Regions	**1975**	**2002**	**2015**
World	37.2	47.8	53.5
Developing Countries	26.4	41.4	48.6
Least developed countries	14.7	26.1	33.4
Arab States	41.7	54.2	58.8
East Asia and the Pacific	20.4	40.2	51.0
Latin America and the Caribbean	61.2	76.2	80.8
South Asia	21.3	29.6	34.3
Sub-Saharan Africa	21.0	35.0	42.4
Central and Eastern Europe and CIS	56.8	62.8	63.7
OECD	67.3	75.7	79.0

Source: UNDP (2004:155). CIS = Commonwealth of Independent States. Please see Appendix for details.

This tendency correlates furthermore with the notion how «quintessential innovation milieux» (cosmopolitan cities) have continued to match and even surpass the archetypical technopoles in innovative performance. Such cities have reading technopolitan history produced genuine innovation milieux where successful innovations have occurred frequently. I must make the reader aware of that success, in this matter, needs to be defined specifically in relation to the objectives pursued in the advancement of each technopole, and that is a research challenge that goes way beyond the limits of this dissertation.

Yet it is possible to concentrate some facilitative elements which the city has proven to harbor most effectively. My second question is then: why do innovative individuals cluster in *specific* cities?

To discuss these questions in succession, I have divided the chapter into two parts. In the first part I will to begin with introduce some background history of why cities are considered as premium innovation places. Secondly, I will single out five groups of factors that favor what Florida (2004a) names «the urban ecosystem» as innovative arena.

The second part is devoted to the attempt of bridging economy, cities, innovation and culture. Numerous books have as we experienced in the previous chapter been published with the aim of targeting why innovative individuals live (and want to live) in certain cities. This is also the case of conventional economists aiming at identifying what instrumental elements constituting a high-tech region. But very few have tried to combine these two wholeheartedly. That is, up until now. With Richard Florida's introduction of his Creative Class-theory, we have a theoretical framework suitable for our purpose. *The Rise of the Creative Class*, as his book is entitled (first published 2002, updated edition 2004), has become a landmark study on how the American society is changing with regards to creativity as key means of creating good innovation milieus and thus improving economic performance. I will therefore introduce some of the key features of this theory, just to frame my theoretical point of view for chapters to come, and resume them empirically in chapter 6.

Part One: The Urban Way

When visiting cities like Paris, Shanghai, Tokyo, or New York, the physical and cultural atmosphere surely gives you an idea of why cosmopolitan metropolises are seen as stimulating settings of innovation.[1] City historian Sir Peter Hall (1999:7) writes: «the biggest and most cosmopolitan cities, for all their evident disadvantages and obvious

problems, have throughout history been the places that ignited the sacred flame of the human intelligence and the human imagination».

The historical record shows that the concept of the city as a milieu of innovation is of very old origin. Wheatly (1971) and Ponting (1991) identifies seven urban areas in the ancient world, from Mesopotamia and the Nile and Indus valleys to Mesoamerica and Southwest Nigeria. These places had several common characteristics. They were institutional control centers, housed the social elite, produced technological improvements, they were meeting points for trade, and symbolized the political power of the region. And not to forget, they were indisputable centers for intellectual life, esthetic values, ceremonial and religious worshipping. Basalla (1984) points at the urban references of Socrates and the Moslem philosopher Ibn Khaldun, whose theories link to more recent urbanites like Robert Park and Jane Jacobs.

In the 12th century «the merchant city» emerged, with flourishing trade cities in Europe like the German Hanseatic League towns of Hamburg and Lübeck, the Italian Mediterranean cities of Genoa and Venice, trading with Arabic and Asian countries (Short, 1996). When the first industrial revolution arrived approximately 1750, cities amplified their cultural importance and remained crucial hubs of trade, services and industry. The rise of consumerism and the capital economy was by far an urban feature; retail shops, the media, headquarters, the large banks, and stock exchanges were located in big cities (Fox and Lears, 1983; Palmer and Colton, 1984; Braudel, 1984).

This development continued throughout the 20th century, except during the recessions in the 1970s and 1980s, where urban regions were facing problems as the information- and communication technology (ICT) revolution made regional planners

predict «the electric requiem of cities» (see Wheeler and Aoyama, 2000). They have although recovered to become global cities, both financially and culturally. Connected to agglomeration economics, which is probably the strongest economic incentive for technopolitan clustering, there has been a transformation from agglomeration of material production to agglomeration of creativity. The crucial role cities play in today's innovation system has been confirmed by a number of recent studies (see Hall, 1999; Crevoisier and Camagni, 2000; Landry, 2000; Woo, 2000; Sassen, 2001; Simmie, 2001; Acs, 2002). So-called «buzz cities» (Storper and Venables, 2002), allround urban regions which is likely to be economically most competitive, harbor core agglomerations of five assorted sectors (1) creative and cultural functions, (2) tourism, (3) finance and business services, (4) science, technology, high-tech and research, (5) power and influence (governments, headquarters, agencies).

History thus point out cities as likely innovation scenes. A simplified argument can be drawn like this: Proximity of a diverse population in age, sexuality, ethnic origins, and widespread talent fosters culture, communication and communing; fosters creativity; fosters innovation. An analysis of some 300 regions by Brian Knudsen found that patenting and high-tech industry are strongly correlated with high population density – especially the concentration of creative people like scientists, engineers, artists, and musicians (referred to in Florida, 2004a). Landry (2000:9) concluded, after examining a handful of cities[2], that «we could see the positive glow from cultural institutions and how *the cultural sector had a direct impact on inward investment* by attracting international companies who seek a vibrant cultural life for their employees [italics added]».

But even more interesting is the question of how cities are innovative. First we have to take a look at what kind of elements that generally constitutes an innovative city, before we turn to why people live in specific cities.

Five Urban Preconditions for Innovation

There are numerous preconditions for a city to be innovative, and schematically, we might say that there are five groups of factors. These preconditions are, according to the vast literature referred to above when pointing to the city as innovative milieu, best taken care of, facilitated and implemented by the urban ecosystem. The validity of each precondition can, according to Landry (2000:105), «be tested by asking whether a city would be creative without it».

I must make the reader aware of that there is no strict causality between the following constitutive innovation elements and creative people, in any direction. Cities attract creative people, but creative people also have a lot to do with making cities attractive.

The Personal Qualities of Cities

There can be no innovative movement unless cities have a critical mass of creative individuals, people who think resourcefully, open and flexibly, who are tolerant for diversity, willing to take intellectual risks and think problems afresh and reflexive. This critical mass is found more often in cities than in rural areas, due to the spatial proximity

of people and businesses, higher competition, larger concentration of specialized labor, and the variety and amount of cultural flows (Hall, 1999; Landry, 2000; Florida, 2004a).

Moreover, the innovation praxis must also be considered to be a matter of network interaction between *strategically* placed creative individuals and routine structures. Different roles will be catalytic in different circumstances (Landry, 2000).

Cities Embrace Human Diversity and Varied Talent

Diversity *per se* is neither good nor bad. It may on the one hand, as extremely visualized by the recent Iraqi riots, foster violent conflicts. But the ability to exploit the potential of diversity is on the other hand reported to have positive effects on creativeness and cultural development, as well as political stability and democracy (UNESCO, 1995; 79-91 and 178-228; UNESCO, 2002; UNDP, 2004.). The third party is tolerance, something which will be further elaborated later in this chapter. By harboring cultural diversity and talent unparalleled to other organizing units of living, tolerant cities become playgrounds for cultural *bricolage*, hybridization and creolization – facets which in turn are conducive to innovation (Rushdie, 1991; Öncü and Weyland, 1997; Eriksen, 1999; Miyakawa, 2000).

If we take a closer look at some of the world's most innovative cities, immigration appears to be one key to establish creative milieux. Historical studies of the innovative capacity of cities as diverse as Tokyo, Shanghai, Vienna and New York show how migrants and immigrants positively have helped invigorate all sorts of communities (Palmer and Colton, 1984; Hidenobu, 1995; Lakshmanan and Chatterjee, 2000; Zachary,

2001; Leman, 2002, Gu and Tang, 2002). Hall (1999:285) concludes early in his +1000 pages work on cities in civilization that «probably, no city has ever been creative without continued renewal of the creative bloodstream». In the US in 2001, for instance, 36 % of all PhDs in science and engineering awarded were foreign-born (OECD, 2004:25).[3]

Cities Foster Strong Local Identities

In the age of globalization the term «strong local identities» might seem like an anachronism (see Ohmae, 1994; Appadurai, 1996). But reality expresses quite the opposite. Identity is one of people's major sources for meaning and experience in our «liquid» world of cultural flows (Castells, 1997; Bauman, 2000). Secondly, local identities connected to place, in our case symbolized by distinctive cities, are becoming «glocalized» – hybrid places of global and local impulses – nodes in a global network of urban places.

People and their businesses are increasingly identifying themselves with the cities and regions they live in and to the broader urban network, not primarily their countries (Eade, 1996; Dürrschmidt, 2000; Sassen, 2002).[4] Table 3.1, showing some of the results from the World Values Survey done during the 1990s, may indicate this further.[5]

Table 3.2 Primary Type of Territorial Identity (percent)

Profile	*Variable*	*World-continent*	*National*	*Local-regional*
All		15	38	47
Continent	North America	16	43	41
	South America	17	37	45
	North Europe	11	36	53
	Northwestern Europe	13	25	62
	Southwestern Europe	13	23	64
	Eastern Europe	8	34	58
	Former Soviet Union	15	32	53
	Middle East	12	49	39
	Asia	13	32	55
	Africa	9	41	49
Cohort	1905-14	6	33	62
	1925-34	10	38	53
	1945-54	19	37	44
	1965-78	21	34	44
Size of town	Low (less than 2000)	11	34	55
	High (more than 500,000)	21	36	43
Type of culture	Northern European	12	36	53
	English	19	41	41
	Catholic European	13	24	64
	Confucian	5	44	52
	Central European	7	33	60
	Soviet	16	31	53
	Latin American	8	50	43
	Southeast Asian	8	29	63
	African	9	41	49

Sources: Adapted from Norris (2004:292); see also World Values Survey, University of Michigan (http://www.isr.umich.edu). Please see Appendix for details.

As we see, the local-regional type of territorial identity scores high mostly across the world. Another observation confirming the notion of how places become «glocalized» is while generations born after 1945 remain tied to their local-regional identity, an increasing percentage of them are also becoming more cosmopolitan.

This facilitating point exemplifies furthermore the Janus-face of culture: on the one hand, in order for a city to create or maintain a distinctive cultural identity, people have to cherish the elements that consolidate its cultural uniqueness. The night sides of this are if the cherishment turns to attitudes and practices of discrimination and segregation.

That said; it is of course not impossible to find a proper balance. New York City has for centuries been a complex conglomerate of ethnicity, income levels and cultural origins – in 2003, some 36 % of the population was foreign-born (UNDP, 2004:99). Still it seems to be a certain type of «New Yorker», especially after the terrorist attacks on September 11, 2001 (Berrol, 1997; Mattingly et al., 2002; Weill, 2004). Thus, a strong local identity is not incompatible with an inclusive openness for diversity and change.

Cities Entertain Urban Spaces and Facilities

The ICT revolution tempted several commentators to predict both «techno-economic parity»[6] and «the end of cities» (for discussions see Gates, 1995; Negroponte, 1995; Bott et al., 2000; Wheeler and Aoyama, 2000) due to the decreased need of being physically close to prior industrial centers. The recent development of urbanization has although forced these claims to be withdrawn. Cities are increasingly strengthening their roles as nodes capturing and creating global flows of capital and culture (Castells, 2000; Sassen, 2001).

According to Landry, «public space, sometimes known as the public sphere or realm, is a multi-faceted concept at the heart of the innovative milieu» (2000:119). Being both a physical setting and an arena where exchange can occur through a variety of

communication forms, it stages and develops creativity because it allows people to go beyond their circle of family and professional relations. Oldenburg (1989) names them «third places», in addition to the «first two» places; work and home. Usually located at the city's core, like the Piazza del Campo in Sienna, they are physical embodiments of public space (ibid.).[7] They represent places for commonality, functioning as «neutral territory», and act as key locations for the public realm. They are everything from spaces to simply hang out to meeting places for business, life, and politics; e.g. cinemas, cafes, clubs, concert halls, restaurants, festival areas, theatres, libraries, parks, artist districts, streets and quarters. They have a specific identity for day- and nightlife and are enclaves of differentiated urban collectiveness, like Quarter Latin in Paris or Greenwich Village in New York.

One additional urban facility enhancing the innovative potential is public infrastructure, both material and virtual (so-called baseline capabilities), which have proven to be important for innovative performance (Yusuf and Nabeshima, 2003).

Cities Harbor Networking Dynamics and Associational Activities

These two elements are included from their presence and influence on community-building mechanisms, which are more numerous in cities than anywhere else. Networking and creativity is intrinsically symbiotic, as the greater number of tolerant nodes in a system the greater its capacity for what Albert Einstein named «combinatory play» and innovation (Landry, 2000:126). One example of this may be open and active universities, not locked in academic paths but zealous to support its creative students –

like McGill University in Montreal in the politically turbulent 1960s, when it actively sought dialogues with indigenous minority people from circumpolar areas in arranging university programs (Darnell and Hoëm, 1996).

«Associational activity», which is also assumed to be overrepresented in cities compared to rural areas due to the larger diversity among interest groups, describes the general tendency for people in a society to be active members in associations and voluntary-type organisations, both formal and informal. These activities are on the one hand community mechanisms traditionally enhancing trust, local norms and social cohesion. But they can also be a liberating source to networking and interaction among different groups and individuals, something which have decisive significance on a city's innovative performance (Knack and Keefer, 1997; Putnam, 2000; Castells, 2000).

Part Two: The Creative Class

Triggered by the curious reversal that instead of people moving to jobs, the American economist Richard Florida discovered that companies were moving to or forming in places where skilled and innovative people wanted to live. By analyzing comparatively the list of technological hotspots with the geography of creative talent and the rank indexes of tolerant places receptive to diversity also harboring plentiful of cultural amenities, he found a correlating pattern – and suddenly he had the premises for his theory of a Creative Class. This class, which in Florida's definition consists of a clustering of 38 million Americans – some 30 % of all employed people (2004a:8) – is increasingly dominating the American ecosystem of work, leisure and life.

The basis of the Creative Class, as every other class concept, is economic. Florida defines it as

> «an economic class and argue that its economic function both underpins and informs its members' social, cultural and lifestyle choices. The Creative Class consists of people who add economic value through their creativity … My definition of class emphasizes the way people organize themselves into social groupings and common identities based principally on their economic function (2004a:68)».

But he refuses to talk about economic class in the traditional Marxian sense; that is, in terms of the ownership of property, capital or the means of production. Most members of the Creative Class do not own and control any significant property in the physical sense. Florida explains: «Their property – which stems from their creative capacity – is an intangible because it is literally in their heads» (2004a:68).

The Creative Class consists of two components. The Super-Creative Core includes scientists and engineers, university professors, poets and novelists, artists, entertainers, actors, designers and architects, as well as the though leaders of modern society: nonfiction writers, editors, cultural figures, think-tank researchers, analysts and other opinion-makers. Beyond this core group, the Creative Class also include «creative professionals», who work in a wide range of knowledge-intensive industries such as high-tech sectors, financial services, the legal and health care professions, and business management. There are no clear boundaries between the two categories, and people may move back and forth between them (Florida, 2004a:68-70).

There is no doubt that the American Creative Class is a miscellaneous group with internal differences, especially in terms of geography, age, occupation and income.

Furthermore, many of its members interviewed by Florida disliked the term «alternative» and they did not necessarily identify themselves with its most visible representatives (like Steve Wozniak, Marc Andreessen or Jerry Sanders[8]). Neither do they agree with the bemoaning from some politically conservative fractions that members of the Creative Class erode the moral grounds of the American society by being what Brooks (2001) named «bobos» (bourgeois-bohemian) and opposing traditional family values. In stead, the Creative Class appears more and more as everyday people, living normal lives and having normal families.

The 3 Ts

The framework of the Creative Class-theory exists of a simple formula which Florida refers to as the «three Ts» of economic growth – *technology*, *talent*, and *tolerance* (Florida, 2004a: ch.14).[9] Each is necessary but by itself insufficient condition. The higher score city X gets when playing out all three factors *together*, the higher chance it is for city X to be attractive to members of the Creative Class. Let us take a closer look on what these Ts consist of.

Technology

Technology has been the centerpiece of innovation studies since the pioneering work of Marshall (1920), Schumpeter (1934) and Solow (1956). Using Solow as reference, we find that his neoclassical work on explaining the productivity growth in the American economy in the first half of the 20th century discovered that increasing output per hour of

work was not the result of adding more labor and only of minor importance when it came to adding capital. The empirical material expressed a statistical residual in his production function equation. This residual (or unknown significant factor) was later interpreted to be of technological art, and economic productivity a function of technological change (see Dosi et al., 1988; Castells, 2000).

The ability to innovate premium core technology or technological solutions is thus still a fundamental feature in any innovation system. This includes a complete matrix of well-known research elements in innovation studies, from technological content and what Bill Gates (1995) names «killer applications», education to financing, basic research and commercialization.

It is important to note that the economic imperatives belong in this category, since Florida has not equipped the economic side of the technopolitan story with its own «T». Venture capital and high-tech industries have throughout history reinforced each other's growth, and venture capital firms have had a tendency of locating in places which had well-developed social structures of innovation. The reasons for this were firstly that venture capital, funding unsuccessful projects in places like Pittsburgh or Buffalo, did not work as a magical elixir on innovative performance. Other variables had to be involved. By investigating where venture capital had positive effects, Florida and Kenney (1990) discovered that a large number people involved in venture capital business had own experiences – preferably technological – from the social game of entrepreneurialism. Most strikingly was this finding in places like Silicon Valley.

Talent

Talent is the second T in Florida's model. While economists have long recognized technology and talent as key drivers of economic growth, they usually think of them in the same way they think of more conventional factors of production. Glaeser's theory of human capital (1998) says that concentration of educated people drive economic growth. The social capital theory of Putnam (2000), drawing upon earlier theories of scholars like Bourdieu (1977) and Coleman (1988), views economic growth as a product of social cohesion, trust and community connectedness.

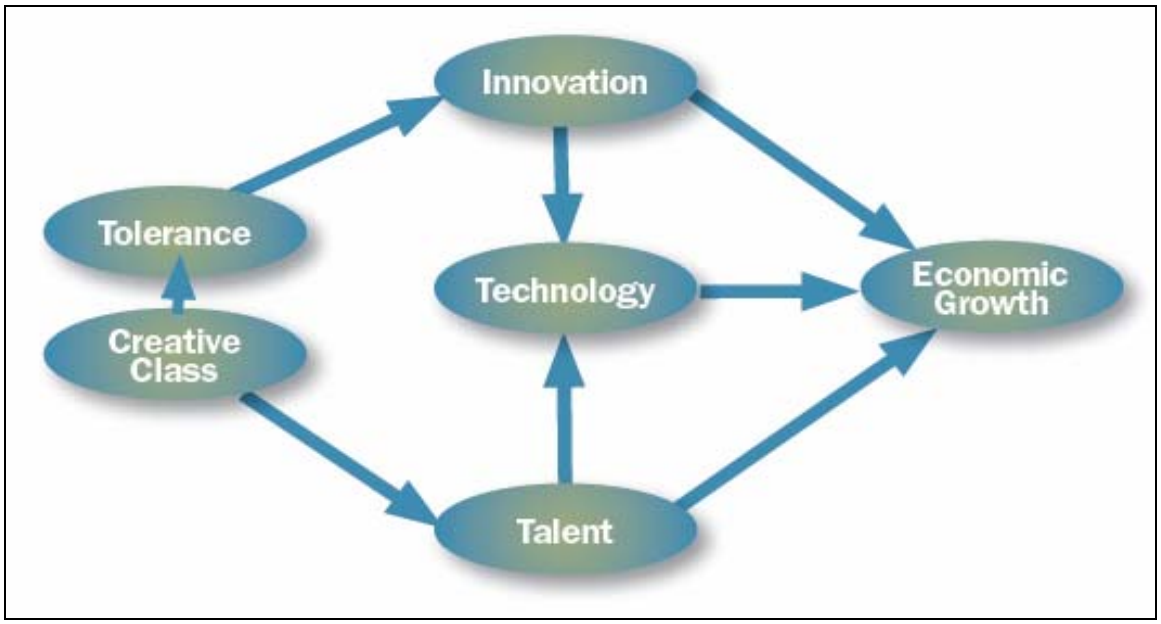
But creative capital differs according to Florida in a fundamental way from both traditional factors of production like land or raw materials and general theories of human capital. They are firstly not fixed stocks, but highly mobile elements that have millions of identities and flow into and out of places.

Moreover, creative capital is a function of creative people coming together at places loaded with a mélange of skills, thoughts and ideas. Places with diverse mixes of creative people are more likely to generate new combinations – the basic premise, if any, of innovation. Florida's main contribution is trying to capture the role of talent by substituting a measure of creative occupations – what they are actually doing – for the typical education-based measure of human capital (2004a).

Tolerance

That brings us to the third T, which is tolerance – a combination of what economists call «low entry barriers» (for newcomers) and an expression for people's attitudes towards diversity and pluralism. Resuming the works of among others Jacobs (1961; 1969), who celebrated the creativity and diversity of urban neighborhoods in New York City, Florida puts forward the notion of how the development of cultural changes, symbolized by e.g. changes in taste and lifestyle values, not only can be considered to be shallow trends, but also rooted in deep economic fluctuations. Tolerance, emblemized by receptiveness for diversity, offbeat people and ideas, is a key factor in enabling places to mobilize technology and talent and thereafter economic growth.

Figure 3.1 Tolerance, Creativity and Economic Growth



Source: Florida and Tinagli (2004:12)

People and the City

In the beginning of this chapter I said that I wanted to find out why creative people cluster not just in cities, but in *specific* cities. One common claim among conventional economists is that once certain cities has jobs people want, the people as well as the amenities, lifestyle options and diversity will follow (Kotkin, 2001; Malanga, 2004). This argument is valid as dominant explanatory factor only if we zero in on the history of urbanism up until the middle of the 20th century. Then the migration picture becomes more complicated.

After World War II, and especially after the end of the Cold War, the impact of globalization has altered the reasons for high-skilled people's location decisions. Apparently this has to do with the globalization of education, offering the growing number of young graduates the possibilities of getting the same bachelor and master degrees almost anywhere in the world. People are vagabonds and globetrotters more than ever, both domestic and international. The number of international migrants[10] has more than doubled since the mid-1970s to reach about 175 million (UNDP, 2004:30). Traveling to attractive places has become a norm of living. People have, as vividly dubbed by Clifford (1997), gone from «roots» to «routes».

Such a place-governing mentality is increasingly transferred to working life as younger generations enter the labor markets. In a survey of 960 people looking to switch jobs, location ranked second only to salary (by 25 % versus 32 %) as the prime motivation for switching (Dunham, 2001). Another survey of 4000 recent college graduates reported in *The Wall Street Journal* in 2002, revealed that three-quarters of them identified location as more important than the availability of a job when selecting a

place to live (cited in Florida, 2004a: xix). Furthermore is it an intertwined link between why people move *away* from somewhere as well as *to* other places. A third disturbing element is external variables, such as is living costs and mobility which often keeps out creative people from the most attractive places and force them to live elsewhere. A family of four has more practical connections to a place (making the moving process more complicated), and secondly greater trouble finding an affordable triple bedroom apartment in downtown San Francisco, than a single person.

Creative workers generally want to work and live in a city that caters to other facets of their lives besides work. Lucas (1988:39) state that «what can people be paying Manhattan or downtown Chicago rents for, if not being near other people?». Florida resumes this view by constructing a term summing up factors that go into Creative Class locations decisions: *quality of place*. The characteristics defining the quality of place go into three groups (2004a:232):

- What's there: the combination of the built environment and the natural environment; a proper setting for pursuit of creative lives.
- Who's there: the diverse kinds of people, interacting and providing cues that anyone can plug into and make a life in that community.
- What's going on: the vibrancy of street life, café culture, arts, music and people engaging in outdoor activities – altogether a lot of active, exiting, creative endeavors.

These amenities are finally as near to contextually unique for every city. Donald (2001) points out an important distinction in how «quality of place» is not tantamount to «quality of life» and that the two terms propose translation problems. A list of ingredients

constituting quality of place (cf. the instrumental inventory of technopolitan policies) may be perfectly divergent to a list of ingredients constituting quality of life (ibid.).

And while money still plays a crucial role, individuals are not quite as inclined to accept a job in a less desirable location just for salary benefits. Drucker (1999) claims that improving modern industrial performance not only is a matter of satisfying the greed of workers, but also a matter of satisfying their values. Famous Linux-developer Eric Raymond suggests «passion» (for whatever) and «peer recognition» as clues for high-priority motivation factors (Florida, 2004a:88, 94; see also Raymond, 1999). David and Dasgupta (1994) even argue that peer recognition is the primary force in the «new economics of science».

Jobs-versus-people is a classic chicken-or-eggs dilemma, but according to Florida they come together at the nexus of place. It is increasingly place which governs where people want to live, not the corporation. Kotkin (2001) points out how some places have become «nerdistans», such as today's Silicon Valley. Then there is what Brooks (2001) satirically calls «latte towns», more rural areas with plentiful outdoor amenities like Boulder, Colorado. Finally, there are the traditional urban centers like New York City whose rebirth partly has been spurred by a combination of creativity and lifestyle amenities.

Leading creative centers like San Francisco Bay Area provide according to Florida (2004a:285) *all three* of these options, spearheaded by a tolerance for all sorts of people and family arrangements. Remembering the term «buzz cities» previously elaborated in this chapter, we find that cities harboring a diverse mix of business, finance

and culture, are most likely to be innovative and productive, and thus they connect to Florida's claim.

Where It All Began

In the next chapter I will investigate the technopolitan region which successfully pioneered this blending of the three Ts and greatly inspired Florida to develop his theory, to be exact: Silicon Valley.

Notes

[1] All cities contain, in some form, darker venues: Poverty, exclusion, gentrification, alienation and solitude. One known case is when people are forced to live in *ghettoes*, originally an Italian term for Jewish neighborhoods in medieval cities, which was enforced by custom and law. The Jewish ghetto was the place of the non-Christian others, the people who worshipped a different God (Short, 1996:222). One case is the 1948-93 white dictator regime of South Africa, where the Group Areas Acts of 1950 and 1966 restricted whites, coloreds («mixed race») and Indians to specific neighborhoods. In Belfast, Ireland, Protestants and Catholics share the city, but live in separate communities. The ancient city of Jerusalem is divided between Jewish West Jerusalem and Arab East Jerusalem (Short, 1996).

[2] Among these cities were Barcelona, Sydney, Helsinki, Bangalore, Montpellier, Ahmedabad, Dublin and Strasbourg.

[3] On the other hand we must be careful not to overstate these migration trends; less than 10 % of all R&D scientists live more than 100 km from where they were born (Narula, 2003:42).

[4] A variant of this is people increasingly identifying themselves with local communities within large cities. It has for instance been shown that West African traders in New York City, among these a large number of undocumented immigrants, isolate themselves because of the trust they find within their own community. This has to do with cultural, legal and religious reasons (Stoller and McConatha, 2001).

[5] The definitions of different cultures and regions in the World Values Survey are of course approximate and highly arguable. The division of European regions, for instance, has no equivalents in Asia, Africa, or the Middle East. But as an indicator of how people value their regional identities, the survey represents a reasonable image of the major tendencies in cultural changes the last two decades. Please visit http://www.isr.umich.edu for more information.

[6] This expression can be read as all actors have the same technological standard available to approximately the same costs (see Ridderstråle and Nordström, 2002).

[7] Zukin (1995:3-9), seeing urban development as synonymous with the development of a «symbolic economy», phrases it like this: «A significant number of new public spaces owe their particular shape and form to the intertwining of cultural symbols and entrepreneurial capital … the identities of places are established by sites of delectation».

[8] For those of you unfamiliar with these names, I can tell you that they represent symbolic characters of the Creative Class. Steve Wozniak founded Apple; Marc Andreessen co-invented Netscape; Jerry Sanders founded Advanced Micro Devices (AMD), and was in addition reputed to spend huge sums of money on luxurious items, such as diamond jewelry and Rolls Royce cars (see Bylinski, 1976).

[9] For broader investigations of the methodology used, please see Florida (2002c; 2004a:327-80, appendixes A and B).

[10] International migrants are defined as people living outside their country of birth (UNDP, 2004:30).

Chapter 4

The Paradigmatic Example

Introduction

The paragon of technopolitan development is without doubt the Californian region known as Silicon Valley. Not only was it the first technopole in history; it is also one of the most successful in terms of long-term economic performance and has been widely admired for its social organization (Castells and Hall, 1994; Saxenian, 1996; Hall, 1999; Landry, 2000). As stated in chapter 1, nearly all successive technopoles refer to Silicon Valley in terms of innovation policy, economic strategy, and cultural characteristics.

While most succeeding technopolitan endeavors have struggled if only focusing on the instrumental characteristics of Silicon Valley, it has turned out that other technopolitan regions harnessing a range of cultural variables, *in addition to the necessary instrumental variables*, have performed much better. How can we explain this?

My suggestion is that Silicon Valley was the ultimate pioneer of blending instrumental and cultural variables in the innovation matrix. By amalgamating Florida's three Ts – technology, talent, and tolerance – long before his theory was born, this region became the icon of culturally informed innovation models. It did not merely focus on the instrumental variables, but harnessed in addition the area's magnitude of cultural variables like human diversity and openness and mingled them with technological

innovations and economic growth. I am not saying that somebody planned or structured the cultural characteristics of the region by outlining innovation policies which included cultural variables; on the contrary, a small number of creative individuals in Silicon Valley only took clever advantage of the existing cultural flower-power climate in the 1960s – which happened to be conducive to innovation – and made it a feature of the region's business image.

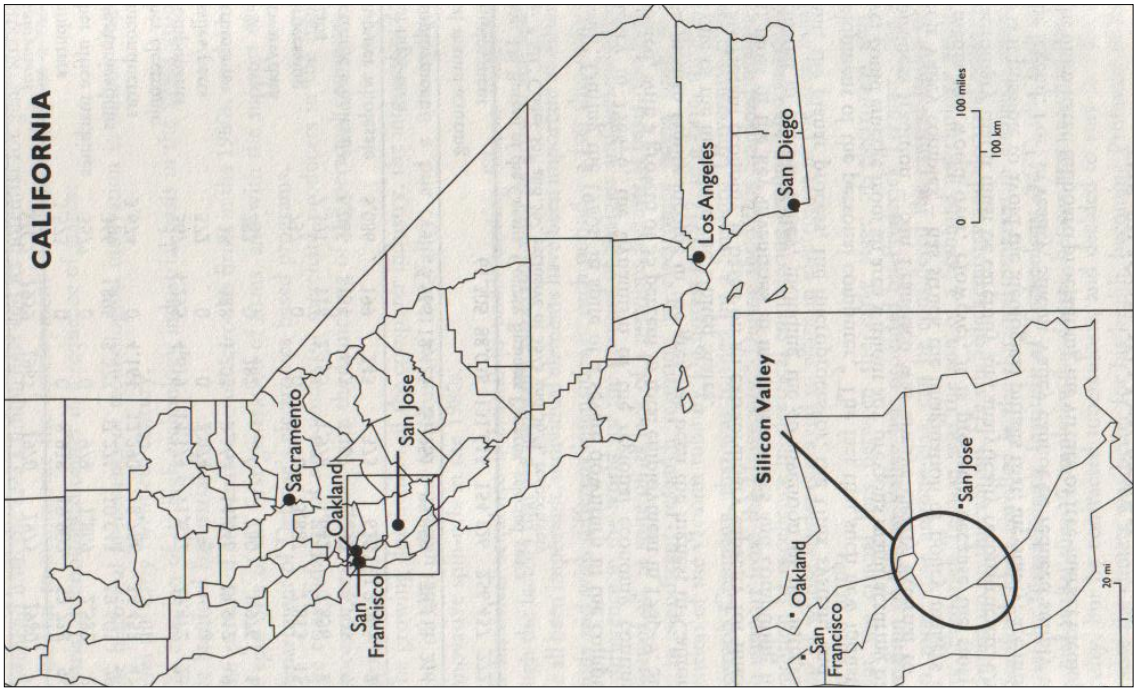
This is easier to understand if we accept the Valley's connections to San Francisco, which was a true hotspot in American culture in the 1950s and 1960s. Although Silicon Valley is no city in a strict sense and somewhat geographically remote from San Francisco, Malone (1985), Castells and Hall (1994), Saxenian (1996) and Florida (2004a) all claim that this region cannot be fully understood unless we see the cultural relations to the San Francisco Bay Area.

I will therefore in this chapter investigate the history of Silicon Valley, its cultural characteristics, and the blending of the three Ts which has made the region the paradigmatic example of technopolitan development.

The Revolution Begins: Silicon Valley

The history of Silicon Valley, or more precisely; Santa Clara County, 30 miles south of San Francisco, between Stanford and San Jose, is usually traced back to the visionary and active Dean of Engineering and Provost at Stanford University, Frederick Terman.

Figure 4.1 Silicon Valley, California, US



Source: Castells and Hall (1994:13)

Terman's pioneer establishment of Stanford Industrial Park[1] in 1951, derived from the Stanford Research Institute (SRI) founded in 1946, launched by offering low rent and high-quality facilities materially as well as culturally a boom of attracting new innovative firms, people and start-up electronic companies. He was particularly convinced of the community of interest between the University and the local industry, saying

> «such a community is composed of industries using highly sophisticated technologies, together with a strong university that is sensitive to the creative activities of the surrounding industry. This pattern appears to be the wave of the future» (Saxenian, 1981:50).

Raising capital was another one of Terman's specialties; by 1955 gifts from corporations had reached $500,000; by 1965 $2 million, and by 1976 $6.9 million (Hall, 1999:429).[2]

The Park was soon filled with entrepreneurial activity, and encouraged other firms to locate themselves down freeway 101 toward San Jose, also spreading to cities like Mountain View and Sunnyvale. Large firms of the time like Fairchild Camera & Instrument, General Electric, Philco-Ford, IBM, and Lockheed Missile & Space Company all located during the 1950s in Santa Clara (Hall, 1999:432). Population growth was massive; the county's population rose 121 % from 1950 to 1960 and another 66 % from 1960 to 1970 (Hall, 1999:423).

One decisive event was the breakthrough at Texas Instruments (TI) in 1954, when they succeeded in making a silicon transistor (Hall, 1999:434). A second event was the moving to Palo Alto in 1955 of William Shockley, one of the three inventors of the transistor[3] and a Nobel Prize winner in 1956. Shockley left AT&T's Bell Laboratories in 1954 to commercialize is own invention by selling it to East Coast companies.

He did not have much success. After only one year the «Fairchild Eight», as they became known, all left Shockley's company, which then collapsed, and with help from Fairchild Cameras the leavers managed to create Fairchild Semiconductors. By 1965, 10 new firms had been created by former Fairchild engineers, and one-half of the 85 largest American semiconductor firms in 2000 could be traced back to this spin-off process from Fairchild in the 1950s and 60s (Castells and Hall, 1994; Castells, 2000).

Initially, this networking of technology transfer and diffusion was the innovational constituent on which Silicon Valley were built. In the 1950s and early 1960s Berkeley and Stanford were not yet leading centers in electronics; Massachusetts Institute of Technology (MIT) was, and the industrial main point was in the Greater Boston area especially along Boston's Route 128. But as soon as the Silicon Valley began to attract

knowledge and dynamic individuals, the picture changed. While the companies in the East US were considered increasingly rigid and reluctant towards radical changes (innovations), Silicon Valley kept churning out new firms, like «enterprising Minervas from the head of Zeus» (Hall, 1999:437-38). Another key factor was the existence of venture capital firms' networks in the early stages. Many of the early investors originated from the engineering business, and thus they were knowledgeable about the technological possibilities of the innovations on which they were betting (Florida and Kenney, 1990; Castells, 2000).

Associational forums, acting as community-building mechanisms, were also present from early on. Already in 1943 the West Coast Electronics Manufacturers Association (WCEMA) was formed, mainly in response to an announcement by the War Production Board of a drastic cutback in the contracts to West Coast firms. Stanford University opened its classrooms to local companies in what was called the Honors Cooperative Program, where engineers at electronics companies could enroll graduate studies directly (Saxenian, 1996). On the other hand there was never a large labor union in Silicon Valley, primarily because many Silicon Valley entrepreneurs regarded unions much as they viewed East Coast corporations – in Saxenian's words; «relics of a dying industrial order» (1996:55).

Silicon Valley Culture

As noted in chapter 1, technological revolutions are usually associated with some form of cultural specifics (Hall and Preston, 1988). Silicon Valley survived the explosion of new semiconductor firms in the 1960s, the development of the personal computer (PC) in the

1970s internationalization and recession in the 1980s, and the 1990s renewal of the valley around high-end research and customized production has maintained its image as the high-tech haven of the US.

Through all these decades the open culture of Silicon Valley has been consistent since the 1950s, although the attempts of mechanically implementing cultural specifics have been rather few.[4] In stead, the leading thinkers in Silicon Valley have primarily sustained the cultural traditions of which the region emerged upon in the 1950s and 1960s, and furthermore continued to harvest the benefits of running businesses in a culturally vibrant community.

We can carve out four groups of factors where Silicon Valley has distinguished itself from most other technopolitan stories.

The Centrality of Work, Meritocracy and Individualism

Although many stories and reports treasure people's laidbackness in Silicon Valley, they worked devastatingly hard, and the work often meant the world to them (Rogers and Larsen, 1984). In a seminal survey done in autumn 1984 by *San Jose Mercury News*, 49.2 % responded that what they do at work is more important than they money they earn. 38.7 % claimed that their main satisfaction in life comes from their work. 59 % said they were very satisfied with their jobs, against 46.7 % for the whole of the US. 30 % work between 41 and 50 hours a week, while 10.4 % claimed they worked more than 51 hours a week (referred to in Castells and Hall, 1994:21-22).

Personal motivations (not money) and peer recognition within an informal culture joined hard work as an opportunity of realizing innovational dreams. Living in a meritocracy where competition was fierce and winners took it all, the most eager ones in Silicon Valley almost had a cutthroat desire for making it, and making it *big*. The same pattern is found in today's Creative Class. Florida names this «the front-loaded career», meaning young up-and-comers working «excruciatingly long at the outset of their professional lives in the hopes it will pay off in greater income, marketability and mobility later» (2004a:154-55).

This relates to how the history of Silicon Valley shows patterns of extreme individualism, in the sense of familiarity and related values. While having a lot of personal contacts and networks (so-called «weak ties»), the young professionals of the Valley were mainly single or divorced, and only 20 % of the labor force in 1984 was over 45 years of age (Castells and Hall, 1994:22). The seeds to what presently is known as «Me, Inc.» (see Ridderstråle and Nordström, 2002); the individual obsessed with his own branding of identity and success, was sown here.

Diversity

From the beginning in the early 1950s the Valley was rather homogenous: virtually all newcomers or natives were young, male Caucasians, educated from prestigious universities in science or technology with some level of experiences from a larger firm other places in the country (Saxenian, 1996).

The area's homogeneity did although not last for long. Soon flows of offbeat people like Steve Wozniak (founder of Apple) were welcomed and funded, and immigrants, particularly from Asia, began to pour into the area. Silicon Valley earned a great deal of innovative freedom by the proliferation of Japanese, Indian, Chinese and European companies, and from the large immigration of engineers and computer experts. The Bay Area around San Francisco, with 2.7 million people in 1950, added nearly a million more ten years later (Malone, 1985:60-61). The population of San Jose grew from about 95,280 in 1950 to 551,224 in 1975, becoming a «bedroom community» for minorities – Mexicans, Filipinos, Vietnamese (Hall, 1999:449-50). In the 1990s, approximately one-third of all high-tech scientists and engineers were foreign-born and one-third of all new start-ups were founded by immigrants (Saxenian, 1999).

Entrepreneurialism

The most symbolic evidence of Silicon Valley's attitude toward entrepreneurialism is the family tree of Fairchild, which has become a widespread map of numerous spin-offs. And when considering only the Bell Labs family tree, 15 firms spun off between 1952 and 1967 (Hall, 1999:451). A large majority of the industrial profile was concentrated on technological innovations. In the early 1980s, the area counted over 6000 PhDs, 2736 electronics manufacturing firms, and an estimated 3000 firms in service activities such as marketing, advertising, consulting, headhunting, external R&D, design, venture capital, legal, and management. In 1990, Silicon Valley was home to one-third of the 100 largest technology companies created in the US since 1965 (Hall, 1999:423-24).

Possibilities of nurturing new innovative start-ups rest on the one hand weak policing of intellectual property rights (IPRs), a rich flora of willingly venture capital firms, combined with a glorification of risk-taking and a social acceptance of failure (that was considered to be a good way to learn something new), created a rapid start-and-stop attitude which encouraged anyone to start a new firm (Rogers and Larsen, 1984; Malone, 1985). Quoting Hamel (1999:71), we see how entrepreneurialism was considered:

> «Stewardship versus entrepreneurship: that's the fundamental distinction between the mediocre mass and the revolutionary wealth creators. Stewards polish grandma's silver – they buff up the assets and capabilities they inherited from entrepreneurs long retired or long dead … investors don't want stewards. They want entrepreneurial heroes – innovators who are obsessed with creating new wealth. Stewards conserve, entrepreneurs create».

Another important part of this entrepreneurial spirit was the role played by venture capitalists. Early on, wealthy local individuals (angel investors) and families from San Francisco were the main source, while management consulting houses proved advice and evaluative services. Later, by the 1970s and 1980s, Silicon Valley manifested its position as the prime center of organized venture capital activity. No less than 59 venture capitalists were located under one single roof at 3000 Sand Hill Road in Menlo Park, just off the Stanford campus (Hall, 1999:452).

Finally there is another important feature of the Valley, namely its ability to transform or even induce the radical technological innovations into a leading industry. Some examples of this are Internet equipment companies like Cisco, Internet portals like Yahoo!, software companies like Oracle; the start-ups of e-commerce companies, like Ebay; and finally the world's most popular communication form webwise, the e-mail

application, created by Ray Tomlinson (who also invented the «@» symbol) (see Naughton, 1999; Castells, 2001).

The Cultural Swirl

Silicon Valley would, summing up the references used in this dissertation, never have become what it is unless «the cultural swirl»[5] had not the developed the way it did. There was indeed a strong cultural specificity in the values and lifestyles of executives, engineers, technicians and skilled workers that forms the human basis of this innovative milieu. Landry (2000:34) even proposes that «Silicon Valley's greatest innovation may be its model of social organization rather than its products».

The very term «Silicon Valley» was coined by journalist Don Hoefler in his series of articles in *Electronic News* in 1971. Hoefler's description of this community is revealing:

> «This common ancestry [referring to ex-Fairchild engineers and scientists, author's comment] makes the semiconductor community there a tightly knit group … Their wives all know each other and remain on the friendliest terms. The men eat at the same restaurants; drink at the same bars, and to the same parties. Despite their fierce competition, away from the office they remain the greatest friends» (Hoefler, 1971).

The flows of information and personal relations; the open-mindedness for creativity and difference, both in technological, organizational and cultural fields; the bar-reinforced, free-exchange of ideas and discussions; their extraordinary versatility and cherishment of entrepreneurialism; the constant circulation of talent; weak ties – all of this is

characterizing the Silicon Valley culture. Most famous are the places for information exchange, like the Peppermill off Highway 101, near Intel (which was a huge breakfast meeting place where about 500 people met regularly) (Granovetter, 1973; Rogers and Larsen, 1984; Malone, 1985; Saxenian, 1996; Hall, 1999).

Coming Next: The Imitators

Having in mind our emphasis on the blending of technology, talent, and tolerance, we see that some creative individuals made Silicon Valley harbor all these elements by taking advantage of a cultural climate facilitating the possibilities for such interplay.

In the next chapter I will continue on this theoretical path, trying to further illustrate the difference between Silicon Valley and other technopolitan regions. Most important is the emphasis on those technopoles performing poorly, and how their meager performances are influenced by their missing cultural qualities.

Notes

[1] This park is by Castells and Hall (1994:16) characterized as «the true ancestor of all the world's future technopoles».

[2] Before these establishment efforts, Terman had also made his mark otherwise; in 1938 he personally supported two of his graduate students – William Hewlett and David Packard – by lending them $538 and arranging a $1000 bank loan in creating an electronics company. In 1945, company sales reached $750,000 (Castells and Hall, 1994; Saxenian, 1996:24). I must add that different sources operate with different numbers on Hewlett-Packard's company sales in this period (from $500,000 to $1 billion), probably due to methodological varieties. I prefer to use the numbers presented in the works of Anna-Lee Saxenian, one of the leading experts on the subject.

[3] The two others were John Bardeen and Walter Brattain, and the invention of the transistor as we know it is usually dated to December 1947, in Bell Laboratories in Murray Hill, New Jersey (Castells, 2000:40).

[4] One example of this might be the managerial style of Hewlett-Packard, the so-called «HP way». William Hewlett and David Packard, together with Intel co-founder Robert Noyce, pioneered American management styles based on teamwork, flexible participation, and openness. Even when these firms grew larger, they strived to preserve the structural transparency, individualism, and interpersonal intensity. The physical setting at HP also encouraged informal interaction, by giving easy access to all teams, institutionalizing the notion that good ideas may come from anywhere. While engineers and other technologically innovative individuals were creating a cultural community that blurred the traditional boundaries between firms, they were also erasing the traditional boundaries between employers and employees and between corporate functions within the firm. In stead they were creating, way ahead of their time as actors in a capitalistic system and «the revolution of flexible specialization», interdependent confederations of project teams that were linked by intense, informal communications and that mirrored the region's industrial structure (Saxenian, 1996:50-55).

[5] This term is borrowed from Hannerz (1992), describing in other words what constitute the cultural «buzz» of a city, that is, the urban sum of activities, places and happenings. See also Storper and Venables (2002).

Chapter 5

The Imitators

Introduction

In the previous chapter we discussed how Silicon Valley has become the icon of technopolitan development. A great majority of technopolitan cases pronounce their debts to this region, and planners from all over the world have studied the Valley meticulously in order to reveal the secrets behind its success. But even with this admiration of Silicon Valley and copy-paste implementation of the region's instrumental characteristics, the level of success among duplicators is extensively diverse.

In this chapter I am going to investigate some of the various attempts of building national and regional versions of Silicon Valley. The emphasis will be on how technopoles not recognizing the value of cultural variables in the innovation matrix have a tendency of performing worse than the one who does. First, we are going to see how several known technopolitan regions have gotten their inspiration from Silicon Valley. Secondly, we are going to investigate how they differ from Silicon Valley on some important variables in the innovation matrix.

The Silicon Valley Effect

It is not easy to measure the exact influence Silicon Valley has had on technopolitan development since World War II, but it is clear that it has been tremendous. We can go through three examples, more or less successful, to illustrate this.

Akademgorodok

After a visit in the US in 1957, Russian president Nikita Khrushchev was so impressed by the research standards of American universities and social campus environments that he and a team consisting of mathematician and scientific adviser Mikhail Lavrentev, together with two other scientists, Sergei Sobolev and Sergei Khristianovich, decided to conceive the project of a new scientific city – Akademgorodok.[1] It represented Khrushchev's «grand vision of turning Siberia into a future powerhouse of communism» (Castells and Hall, 1994:40; see also Josephson, 1997).

The economic underpinning was totally in the hands of the Russian state, and its exclusive source of financing was through the Science Academy. In 1957, Khrushchev proposed a completely new plan for organizing the economy, due to the terrible economic results following from political unrest and the process of de-Stalinization. This plan contained a significant decentralization of economic planning and administration, primarily operated by a number of *sovnarkhoz*, regional economic councils. One of these sovnarkhoz'es was placed in Akademgorodok, located on the banks of the Ob Sea, fifteen miles south of Novosibirsk. The reasons for this were primarily the need of regionally developing the Russian economy, and secondly improving the image and prosperity of

Siberia after the horror years of inhabiting Gulag concentration camps. Official numbers state an increase in funding Akademgorodok from 5 million RBS in 1962 to 45 million RBS in 1989 (Couderc, 1997:4).

Despite these ambitious plans Akademgorodok has failed to compete with other technopoles. In comparison to the US, for instance, the civilian sector did not reap any benefits of the military industry, quite the contrary; by amplifying the arms race the military industry abused the material and human capital in disfavor of societal challenges (Egge, 1999:246).

Another critical reason to the poor economic results was the site's isolationist design. Khrushchev and later Leonid Brezhnev consciously separated Akademgorodok from external international impulses, and internally through segregated working and living zones. Without possibilities to reap benefits from free exchange of different ideas and skills, together with a literally isolated geographic placement, Akademgorodok offered poor living conditions (Castells and Hall, 1994; Couderc, 1997; Egge, 1999; Thorne, 2001). From 1964 to 1969, 100 of 150 nuclear physicists left the city, mainly moving back to Moscow, although not because of the more promising career opportunities, but due to the better living conditions (Castells and Hall, 1994:47).

Technopolis

The Japanese idea of Technopolis was according to Miyakawa (1997) a hybrid concept imported from the Stanford Research Park in California and from the Cambridge Science Park in the United Kingdom. Although technopolitan influences from the US had been

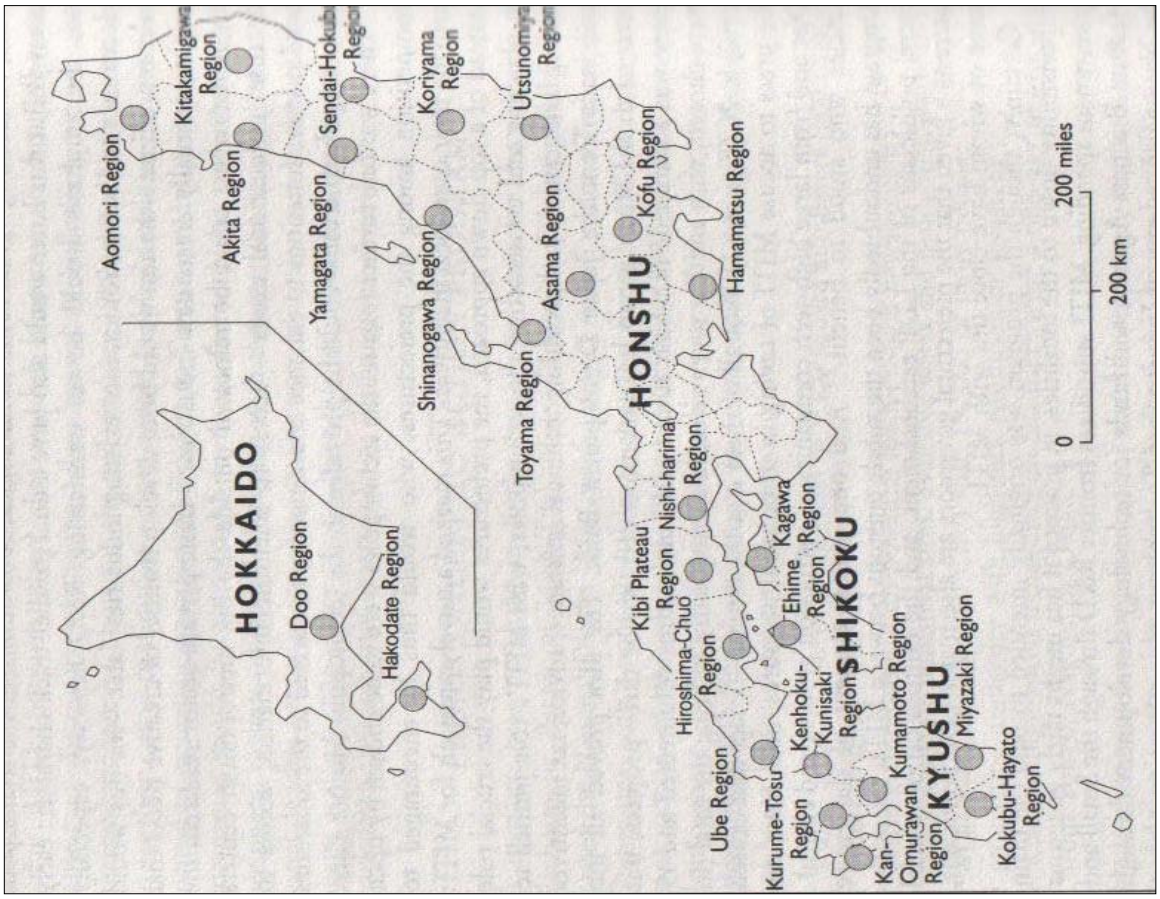
present within the Ministry of International Trade and Industry (MITI) since the early 1950s, the breakthrough year did not come until 1979 (Nakayama, 1991; Castells and Hall, 1994). MITI officials had been impressed by the success of Silicon Valley, and after a meeting with Dr. Edwin Zschau from the American Electronic Association where the main theme was «the process of innovation», the MITI brought together Takemochi Ishii of Tokyo University Engineering Department and Hajime Karatsu of the Matsuhita Communications Company. They analyzed the reasons for Silicon Valley's success, and came up with a list which included research universities, a pool of engineering skills, accessing venture capital, industrial parks, investment banking, and informal networks. Factors from this list were sought combined with traditional Japanese business style management, creating a new policy for high-tech development (Castells and Hall, 1994:115).

Somewhat surprisingly, they disclaimed the existing facilities of both metropolitan Tokyo (too expensive and imitative) and Tsukuba Science City (the researchers were too academic). In stead, borrowing the term *technopolis* from a number one hit pop song (!) about Tokyo, they marked the beginning of what would turn out to become the plan named MITI's Vision for the 1980s (Tatsuno, 1986:118-20). Their vision was defined as:

> «'Technopolis' (technology-intensive city) is a city that effectively combines an industrial sector composed of electronics, machinery and other most advanced technologies with an academic and a residential sector. This concept aims at promoting regional development and creating a new regional culture under the lead of industrial and academic progress» (ISC, 1980:187-88).

This would in fact mean a number of decentralized and downscaled Silicon Valley-duplicates facilitated around the country. A total of 40 out of 47 prefectures volunteered, and 19 were chosen, a number that would increase to 26 in 1990 (Castells and Hall, 1994).

Figure 5.1 Locations of Technopolises in Japan



Source: Castells and Hall (1994:118)

Each of these sites received generous funding. MITI subsidizes «frontier» R&D through the Small and Medium Business Agency, and funds for technology development are located through the National Academy of Industry and Technology. The overall budget,

apart from the frontier R&D, relocation and other promotional efforts, and the hard infrastructure (which was in the hands of the Ministry of Construction and local prefectures) summed in 1985 up to ¥1485 million. Moreover, the Ministry of Construction estimated that the construction sites for 11 of the technopolises averaged $200 million each by 1990 (Fujita, 1988:73; Castells and Hall, 1994:117).

In summing up the Technopolis policy, we may distinguish two elements. First, there is a question of whether the actual experience of technopolises represents the original visions of the plan. Scholars disagree if these new sites are merely conventional satellite towns, part of a «branch-plant syndrome» (where the new sites function only as a facilitator of subsidiary firms of large-scale corporations headquartered in a large metropolis, or subcontracting parent companies), or whether they have become leading technological innovation centers in their own right (Tatsuno, 1986; 1988; Fujita, 1988; Castells and Hall, 1994; Miyakawa, 1997).

Secondly, indirectly or directly, the maintained growth of Tokyo as one of the world's top-three global cities must also be taken into consideration. Several scholars state almost unanimously that the majority of cases – except the ones located within close range of Japan's cultural hub Tokyo – have not been very successful (ibid.)

Cambridge

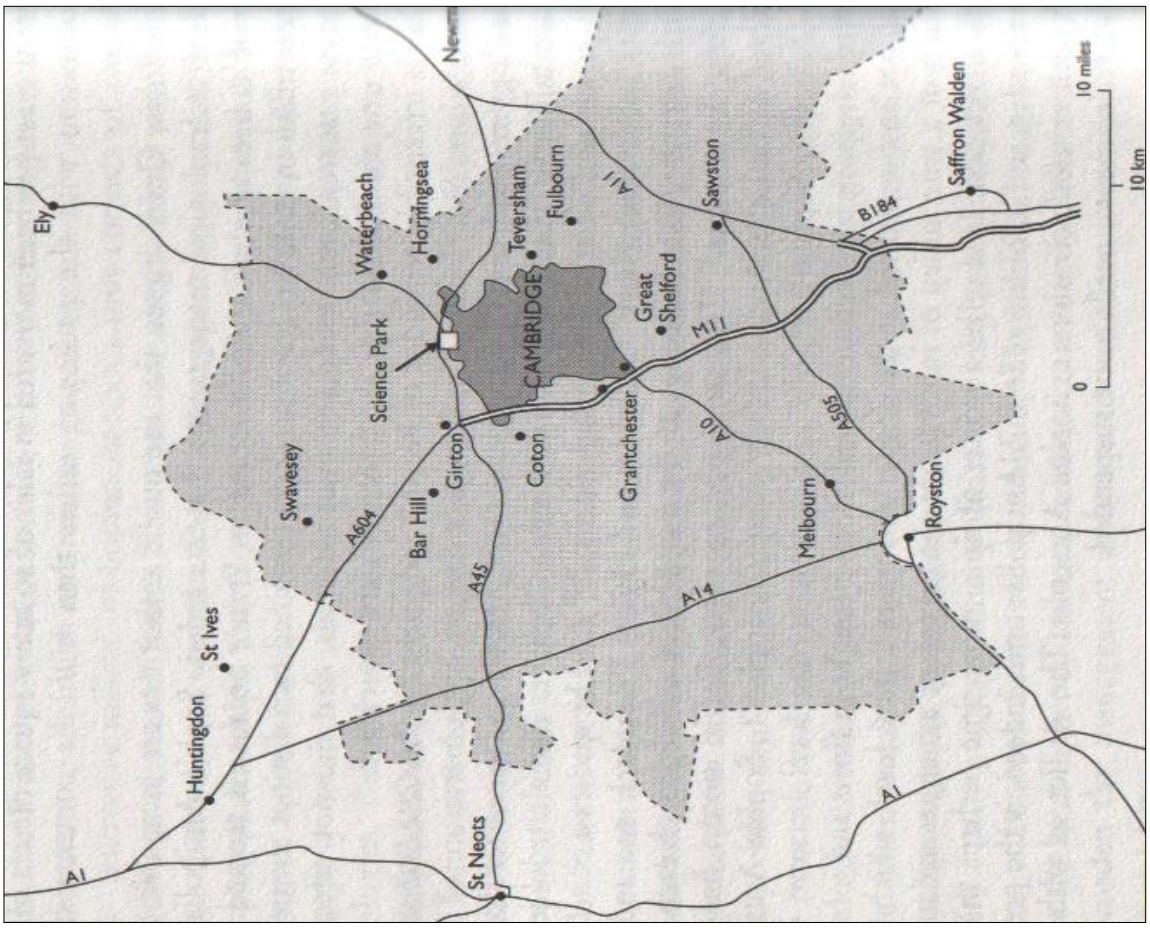
Our third example is the so-called «Cambridge phenomenon», and has three distinctive similarities with Silicon Valley: an active university, a prospering business environment, and a culturally stimulating location.

Sometimes confused with the M4-corridor in the western London region that was established already in the 1960s, Cambridge as a high-tech region was essentially created in the 1970s and 1980s. This technopole represents an entrepreneurial, new-firm-based growth – mainly inspired by the university research model with numerous spin offs present in the early era of Silicon Valley, but also a similar appraisal of cultural variables as innovative mechanisms (Keeble, 1989; Castells and Hall, 1994). Added up, this has apparently been the reason for the generally good performance of Cambridge, even though recessions have occurred (Castells and Hall, 1994; see also EU's European Innovation Scoreboard, 2003).

When interpreting the development of Cambridge, the role of Cambridge University is highly valued. It set up in the mid-1960s a Senate subcommittee to «consider in great detail and advice on the planning aspects of the relationships between the University and science-based industry». The result was the Mott Report published in 1969, recommending that a limited growth of existing and new science-based industry and other applied research units in and near Cambridge would be acceptable, in addition to the most important element: the establishment of a science park (Castells and Hall, 1994:96).

Two years later, Cambridgeshire changed its development plan accordingly, triggering an explosive growth. In 1959 there were 30 high-tech firms in the Cambridge area; in 1974 this number had grown to 100, and ten years later the number was 322.

Figure 5.2 Cambridge Location



Source: Castells and Hall (1994:94)

New-firm establishment averaged one per month between 1964 and 1984, and 1.5 per month during 1974-84 – a rate that almost equals the San Francisco peninsula. 22 % of firms (with 21% of employment) were in electronics capital goods, 23 % (8 % of employment) were in software, and 17 % (22 % of employment) were in instrumental engineering (ibid.).

Cambridge University encouraged research excellence, enjoyed generous research funding, and, in the words of Castells and Hall (1994:97) «combined critical mass with

quality». The college-based structure of the University weakened departmental hierarchies, embodying a positive attitude to individual flair. Furthermore did the University emphasize «an extremely permissive attitude to intellectual property, which belonged to the researcher» (ibid.).

Keeble (1989) furthermore emphasizes the attractive cultural environment by pointing at the immigration pattern: no less than 70 % of high-tech entrepreneurs were foreign-born, and that 79 % of these had been greatly influenced by their environmental perception. This did not only create a dynamic of prospering businesses, but in addition it gave confidence to other actors in the local business community (solicitors, accountants, investors, and others) that they should similarly get involved supporting such enterprises. Just about half of the firms had links with local research, of which 90 % where with the University (Castells and Hall, 1994:96). Finally it encouraged national and international finance institutions to finance local high-tech companies both in start-ups and in later rounds of financing (Segal, 1986).

The additional factor is the proximity and improved communication possibilities to metropolitan London, regarding capital markets, customers, suppliers, cultural amenities, and international communication – the same way as Silicon Valley is closely related to the greater San Francisco Bay Area (Keeble, 1989; Castells and Hall, 1994).

Silicon Valley vs. the Others

We have seen that some of the best known technopoles have been heavily inspired by Silicon Valley when outlining technopolitan strategies. But still there are some major

differences. The endorsement of a culturally stimulating environment is perhaps the element that separates Silicon Valley the most from the floundering technopoles.

In the early 1970s, during the recession, the unemployment rate in Boston's Route 128 peaked at 11 % in 1975. The reasons for this were mainly reduced military spending, but also the suppression of innovative newcomers by industrial rigidity and New England university conservatism (Leslie, 1992; Saxenian, 1996). Very few of the Japanese Technopolises discussed above have achieved their goals, except those being close to Tokyo. The Russian science city Akademgorodok, also discussed above, was unable to develop a true interactive innovation community because of its segregation and isolation policies.

This pattern is similar in other technopolitan parts of the world. Taedok Science Town in South Korea, which was entirely segregated from the city of Taejon (18 miles away), experienced problems when the researchers complained about the lacking of urban life and expressing anxiety for having their children growing up in an artificial environment (Castells and Hall, 1994). Similar problems occurred in Hsinchu Science-based Industrial Park in Taiwan, where engineers refused to live at its residential area. In stead they chose to commute from Taipei (40 miles away), primarily because of Taipei's high-quality schools and variety of urban amenities (ibid.).

Oulu Technopolis in Northern Finland has been successful in attracting people and companies since its startup in 1982, but is increasingly facing recruitment problems as skilled people choose to move to other parts of the world (Young, 2000; Cooke, 2001). In Norway, Oslo is having problems attracting skilled international labor and firms. Some of the reasons for this are that IT Fornebu, The Gaustadbekk Valley, and the concept of

«Oslo Science City» – the knowledge core located within the Gaustad-Majorstuen-Lovisenberg triangle – are met by a collective unwillingness from the city council and the governmental politicians of visioning these areas as something more than loosely defined research parks. Only rarely is the notion of using them to develop Oslo as a national urban center of culture and lifestyles brought forward (Isaksen and Aslesen, 2001; Johnstad, 2003; Oxford Research, 2004; Oslo Teknopol, 2004).[2]

A Culturally Informed Innovation Perspective Takes Form?

By introducing a small comparative table of variables we might get a clearer picture of how Silicon Valley differs from other technopolitan endeavors. The main point here is how the total innovation package of Silicon Valley has been the foundation for its success; that is, its appreciation of *both* economic and cultural variables.

The variables in table 5.1 are gathered on the basis of **a)** conventional innovation economics and figure 2.1 (representing conventional factors governing the genesis and development of high-tech regions) elaborated in chapter 2, and **b)** the general findings in chapter 3 and the lessons from Silicon Valley (representing a positive reception of cultural variables). I am aware of that these variables are roughly defined, so please read them only as indicators of a tendency. No statistical numbers are explicitly extracted in this table. Instead I have relied on what the qualitative literature says of these variables (the sources stated below the tables).

The first three variables in the table are considered to be purely instrumental variables. Industry-entrepreneur linkages refer to what degree systematic connections and programs were present between industries and individual entrepreneurs and small firms.

Capital supply refers to how well the areas have been funded, either through private investments or state support. University-industry linkages refer to the degree of systematic connections and programs between universities and industries available in a given region.

The fourth variable is a double case (it can be both an instrumental variable and a part of the culturally informed perspective, depending on definition). Thick labor markets simply mean that a place offers a job market that is conducive to a horizontal career path, which firstly is a significant working norm of the Creative Class, and secondly an enticement for spin offs and new start-ups (see Hall, 1999; Amin and Thrift, 2002; Florida, 2004a).

The last two variables are considered to be significant parts of a culturally informed innovation perspective. They may be hard to grip analytically, but they are as we shall see nevertheless important for seeing the complete picture of technopolitan development. Basically, they represent other values than usually emphasized or appreciated in explaining technopolitan history. Human diversity symbolizes how well the place is represented with regards to different kind of talent, cultural assemblages, and ethnic groupings.

Finally, high-quality environment is covering not only material infrastructure and baseline capabilities such as buildings, networks, and facilities, but also the social and cultural milieu and socio-structures the place has to offer. By this I understand a variety of cultural amenities and a tolerant public sphere receptive for all sorts of people, ethnicity and lifestyles. A suggestion of how these variables can be measured is given in the Appendix, where I explain some of the methodology behind the empirical discussions

coming in chapter 6, with particular emphasis on the Tolerance Index and the «Quality of Life»-survey.

Simple scores of either 1 (good) or 0 (poor) are given on the basis of how the different variables are appreciated. We can sketch the best technopolitan performers by reading the table from left to right.

Table 5.1 Comparison of Technopoles Worldwide

Variables affecting innovative performance	*Silicon Valley (US)*	*Cambridge (UK)*	*Sophia-Antipolis (France)*	*Sendai Technopolis (Japan)*	*Hsinchu Science-based Park (Taiwan)*	*Taedok Science Town (South Korea)*	*IT Fornebu (Norway)*	*Akadem-gorodok (Russia)*
Industry-entrepreneur linkages	1	1	0	0	1	0	0	0
Capital supply	1	1	1	1	1	1	1	1
University-industry linkages	1	1	1	1	1	1	0	0
Thick labor markets	1	0	0	0	0	0	0	0
Human diversity	1	1	1	0	0	0	0	0
High-quality environments	1	1	1	1	0	0	1	0

Sources: Segal Quince Wicksteed (1985); Fujita (1988); Aydalot and Keeble (1988); Keeble (1989); Quéré (1990); Castells and Hall (1994); Saxenian (1996); Couderc (1997); Josephson (1997); Miyakawa (1997); Oxford Research (2004).

There is no particular pattern giving victory to certain variables affecting innovation. However, cultural variables are apparently influencing technopolitan performance significantly.

As we see, while the best performing Silicon Valley score high on every variable posed as necessary for becoming an innovative leader, with the British and French technopoles close behind, the worse performing Taiwanese and Korean technopoles lack sufficient qualities on all three cultural variables – despite their presence of necessary instrumental variables. At the right side of the table we discover technopoles scoring low on nearly every variable affecting innovation.

Reading the literature stated below table 5.1, we find that the pattern of technopoles performing on the variables in this table resembles the pattern of how these technopoles score on economic performance. This is illustrated in table 5.2. «Economic performance» is a raw indicator of how well the areas have been doing comparatively with regards to economic growth, entrepreneurial activity, and technological development, based on the sources stated below table 5.1.

Table 5.2 Score on Variables Affecting Innovation vs. Economic Performance

Technopoles by score in table 5.1	*Economic performance score*
Silicon Valley	1
Cambridge	3
Sophia-Antipolis	2
Sendai Technopolis	4
Hsinchu Science-based Park	5
Taedok Science Town	7
IT Fornebu	6
Akademgorodok	8

Sources: see table 5.1

I am aware of that some of these technopoles have more focus on scientific development than economic growth. But my focal point still remains, namely how a broad appreciation of cultural variables may positively affect innovation environments.

This means that we can read table 5.1 this way: technopoles failing to value important cultural variables decisive for innovative performance are less predisposed for economic growth. This indicates moreover that conventional innovation economics misses out on some important variables determining the innovative capacity of technopoles.

People, Cities, and the X-factor Disclosed?

If we take a closer look at the three cultural variables, we find that they have one common denominator that stands out: they are all thoroughly affected by people – which also happen to be the missing variable in figure 2.1.

As we found out in chapter 3, innovative people want to live in cities which have a lot of amenities, as well as a large pool of talent and a diversity of businesses and cultures. They don't want to live in homogeneous and closed places. The level and extension of technopolitan strategies seems to be less important than that the place catering the innovative milieu offers people the kind of cultural amenities they are looking for.

In the next chapter I will look at this tendency on a larger scale, investigating if we can discover further examples that confirm our theory. The keyword is blending.

Notes

[1] «Akademgorodok» means «academic little village» in Russian.

[2] Just to make a note on Oslo and urbanity: In comparison to other cities, for example Stockholm, Copenhagen or even Reykjavik, Oslo is not a particularly distinct city. Its urban identity is loose and blurred, suffering from the many bad urban planning decisions made by different city councils. Moreover, being among the top ten most expensive cities in the world, both in terms of production expenses and living costs, it is not a positive factor – especially when the urban amenities not at all justify such high costs (see Hansen, 1995; Østerberg, 1998; for city rankings see http://www.mercerhr.com/).

Chapter 6

The Metropolitan Technopoles

If we postulate only the usual list of economic forces, cities would fly apart

- Robert Lucas

Introduction

In this chapter I am going to present why certain cities have become premium technopolitan arenas. First, we are going to see how a selection of urban metropolises performs on the same variables affecting innovation as posed in table 5.1.

Secondly, we are, through the utilization of Florida's theories presented in chapter 3, going to present an empirical discussion of why cultural variables positively contribute to innovative environments and affect economic growth. The question is: What are the empirical relations between people, the cities where they want to live, innovative performance and economic growth? This means presenting empirical material sequencing the interplay between technology, talent, and tolerance in American urban regions.

Global Cultural Hubs as Technopoles

In favor of my claim, that in order to become a successful technopole it should appreciate cultural variables as part of an innovative environment, we discover a number of cases. The Hormuz corridor, a cross-border region in the Eastern Persian Gulf consisting of a

triangle between main urban centers Abu Dhabi, Dubai, and Sharjah, represent one of the most promising economic zones for innovation, economic growth and cultural development in the Middle East (Parsa and Keivani, 2002). Beirut, the Lebanese metropolitan hub in the Near East, is becoming even more important for the country's economy than before due to the attempts of reinserting the city into the global economy by accentuating innovation and education (Huybrechts, 2002).

Swedish capital Stockholm is beyond question the winner on EU's European Innovation Scoreboard 2003, which is based on various measurements of innovative activities (European Innovation Scoreboard, 2003).[1] Technopolitan initiative *Blue IQ* in South Africa is located in the high-wealth region Gauteng, including cities like Johannesburg and Pretoria (Moodley, 2003). In South America, Argentinean urban hub Buenos Aires is one of the most favorable places for people to move and to locate technopolitan activities (Ciccolella and Mignaqui, 2002). The Malaysian Multimedia Super Corridor, a 15 x 50 km technopolitan zone, is deliberately located across the Kuala Lumpur city region for a mix of cultural, economic, and social reasons (Mahathir, 1998; Mosco and Jackson, 1999). Latvia Technology Park and Estonian Innovation Centre Foundation are located in Riga and Tallinn, respectively, for similar reasons as in Kuala Lumpur (see http://www.innovation.lv/BASTIC.htm). Zhongguancun Science Park, naming itself «China's Silicon Valley», is found in Beijing, the one of China's two major cities (Yeung, 2004; see http://www.zhongguancun.com.cn/en/).

Most visible is perhaps the tendencies striking some of the best known metropolises around the world, e.g. New York, Tokyo, London, Munich, Shanghai, Moscow, and Singapore (Sassen, 2001; 2002). European cultural hub Paris[2], for example,

harbored according to Castells and Hall (1994:152) in the 1990s «the most significant concentration of technologically-advanced firms and public and private research laboratories in the whole of Europe» (see also Hall, 1999).

One strong incentive for emphasizing the importance of cultural variables is that several of these cities on the one hand often lack instrumental variables, but on the other hand embrace the cultural variables, and still score high on technopolitan performance. By inserting a selection of such high-scoring cities into our familiar table of instrumental and cultural variables, we find a pattern resembling the one we discovered in table 5.1: cultural variables apparently seem to affect innovative performance significantly.

Table 6.1 Global Cities as Technopoles

Variables affecting innovative performance	*New York*	*Tokyo*	*London*	*Shanghai*	*Paris*
Industry-entrepreneur linkages	0	1	0	1	0
Capital supply	1	1	1	1	1
University-industry linkages	0	1	0	0	1
Thick labor markets	1	0	1	0	1
Human diversity	1	1	1	1	1
High-quality environment	1	1	1	1	1

Sources: Aydalot and Keeble (1988); Castells and Hall (1994); Saxenian (1996); Olds (1997); Abu-Lughod (1999); Hall (1999); Sassen (2001); Kait and Weiss (2001); Yatsko (2002)

These results indicate that there is something about these cities powering economic growth which goes beyond conventional economic factors. No clear pattern concerning

the instrumental variables comes into sight, except for capital supply. I am not saying that there is a direct linkage between the cultural variables and economic growth. Nor is it just diversity and nice environments that create prosperous businesses. But the most successful technopolitan cities seem to emerge on the basis of a blending of their economic foundations, their cultural qualities, and the skilled and innovative people living there.

Moreover, it is important to remember that the cities in table 6.1 and other cities mentioned in this chapter bear a resemblance to Silicon Valley when it comes to how cultural climates emerge. Cities like New York and Shanghai have been cultural hubs for centuries, and their unique cultural images of today have been formed through a number of epochal culture shifts (Berrol, 1997; Yatsko, 2002). It is therefore not a question of fabricating a typical cultural setting, but to develop the already existing ambiance.

Remembering Richard Florida's notion of «the three Ts» from chapter 3 we now set out to discuss the empirical results from this theory, based on research done on American urban regions.

Is Culture the X-factor? Empirical Discussions

The key to economic growth lies not just in the cities' ability to attract the right people, but to transform their skills into economic productivity. To gauge these abilities, and furthermore relate them to specific places by an operationalization of the three Ts, Florida (2004a) developed what he names the Creativity Index. This index is a mix of four equally weighted factors: (1) the Creative Class share of the American workforce; (2) innovation, measured as patents per capita; (3) high-tech industry, using Milken

Institute's Tech Pole Index (referred to as High-Tech Index); and (4) diversity, measured by the Gay Index, according to Florida a reasonable proxy for an area's openness to different people and ideas. The rankings of this Creativity Index, for regions over 1 million people (a category I will continue using), place high-tech haven San Francisco on top, Seattle at 5th, Los Angeles at 12th, and Las Vegas at 47th, just to mention a few (2004a:244-45). 15 of the top 20 high-tech regions also rank among the top 20 Creative Class centers (ibid.:252).

But to further test this theory of creativity, tolerance and economic growth, Florida and his associates developed two additional indexes. Firstly we have the Bohemian Index, which measures the number of writers, designers, musicians, actors and directors, painters and sculptors, photographers and dancers in a region. The result was positive. Five of the top ten and twelve of the top 20 Bohemian Index regions number among the top 20 high-tech regions in the US. Based on regions with over 1 million people, we have San Francisco at 5th place, Seattle at 7th, Las Vegas at 9th, and Los Angeles at 10th (2004a:261). The second confirmative test was how the Composite Diversity Index (CDI) – an index consisting of three diversity measures; the Gay Index, the Melting Pot Index and the Bohemian Index – correlated with the High-Tech index. (The Gay Index, used as an indicator of a milieu's openness, basically ranks regions by their concentrations of gay people. The Melting Pot Index measures the relations between percent foreign-born and the presence of high-tech industry.)

The results again support Florida's claim that diversity and creativity work together to power innovation and economic growth. We can illustrate this with a table comparing the High-Tech Index rankings with the CDI rankings.

Table 6.2 Technology and Diversity – Top 10

High-Tech Index Rank	*Region*	*Composite Diversity Index Rank*
1	**San Francisco**	1
2	**Boston**	4
3	**Seattle**	8
4	**Los Angeles**	2
5	**Washington, D.C.**	7
6	**Dallas**	14
7	**Atlanta**	13
8	**Phoenix**	18
9	**Chicago**	15
10	**Portland**	16

Source: Florida (2004a:262)

Florida and his team wanted to develop further the connections between diversity and economic growth. One critical dimension according to them in analyzing economic growth is what they name «low entry barriers for people» (2004a: xx). New products derive from new or improved ideas, which in turn come from creative people being allowed to suggest and comment changes in the existing conditions in order to make a better product or process.

By creating a Tolerance Index based on four measures; the Gay Index, the Bohemian Index, the Melting Pot Index, and a measure of racial integration, they used this to capture how integrated rather than separated a community is throughout its internal geography (ibid.; see also Appendix).

The Tolerance Index is yet in its early phase, and Florida warns about reading the results as absolute truths. In stead, he urges us to read them, like all other of his empirical

numbers, as statistical broad-gauge indicators of «a region's ability to harness creative energy for long-run economic growth» (ibid.). By including the new Tolerance Index in an updated Creativity Index[3], new findings have emerged.[4]

Table 6.3 Overall Rankings of Regions on the New Creativity Index – Top 15

Region	*Creativity Index Rank*	*Creativity Index*	*Previous Creativity Index Rank*	*Technology Rank*	*Talent Rank*	*Tolerance Rank*	*Wage Inequality Rank*
Austin	1	0.963	2	2	9	22	7
San Francisco	2	0.958	1	6	12	20	5
Seattle	3	0.955	5	21	15	3	73
Boston	5	0.934	3	35	11	12	20
Raleigh-Durham	6	0.932	6	5	2	52	4
Portland, OR	7	0.926	18	12	45	7	139
Minneapolis	10	0.900	11	47	22	17	69
Washington-Baltimore	11	0.897	9	41	1	45	6
Sacramento	13	0.895	26	15	27	47	74
Denver	14	0.876	14	61	18	25	31
Atlanta	15	0.873	14	23	29	55	50
San Diego	19	0.865	3	25	54	35	18
New York	20	0.848	10	65	25	39	12
Dallas-Forth Worth	21	0.847	11	23	43	63	23
Salt Lake City	27	0.813	41	48	74	36	150

Source: Florida (2004a:355)

Note: The Creativity Index is now expressed as a percentage of the maximum possible score based on the groups being considered. This means that a perfect score – highest possible ranking across the 3 T's; Technology, Talent and Tolerance – would get a 1.0.

As we see, this New Creativity Index reflects the basic notion of how diversity, talent and technology work together in driving economic performance. One thing momentarily standing out is the discovery that the largest cities, often praised for their welcoming of

diversity, not necessarily are the ones scoring high on the Tolerance Index (the exceptions are Seattle at 3rd and Portland, OR at 6th). Reading down the list we find that cities like Burlington, VT, Boomington, IN, Corvallis, OR (scoring on the Tolerance Index 1st, 2nd, and 5th, respectively, all four cities with under 250,000 people) appear as places more receptive to diversity than e.g. San Francisco, New York and Washington, D.C. (see Florida, 2004a: Appendix B, Table 1).

These findings reveal not only that diversity is positively correlated with high-performing high-tech industries. Looking at these relationships from another angle, i.e. examining overall job growth, we still find a positive tendency for matching diversity and economic growth. A slew of key economic performance indicators were run for two groups of regions: the 11 top-performers versus the 11 regions in the US with the lowest Creativity Index scores. Between 1990 and 2000, the creativity leaders actually generated three times as many jobs as the lowest-ranked regions, 2.32 million versus 850,000 jobs. Controlling for the fact that the leading regions employ more people, the leaders still generated jobs at more than twice the rate of the others, 22 % versus 11 %.

The leading Creativity Index regions generated more than 35,000 jobs between 1999 and 2002, while the lowest-ranked regions lost nearly 400,000 jobs. The top-ranked regions added more than 225,000 high-paying creative sector jobs while the lowest-ranked regions lost more than 30,000 of these jobs. The leading regions on Florida's Creativity Index added nearly 500,000 people between 1990 and 2000, compared to 125,000 for the lowest-ranked regions, a growth rate of 23 % versus 9.27 % (Florida, 2004b).

Figure 6.1 Job Growth in the US, 1990-2000

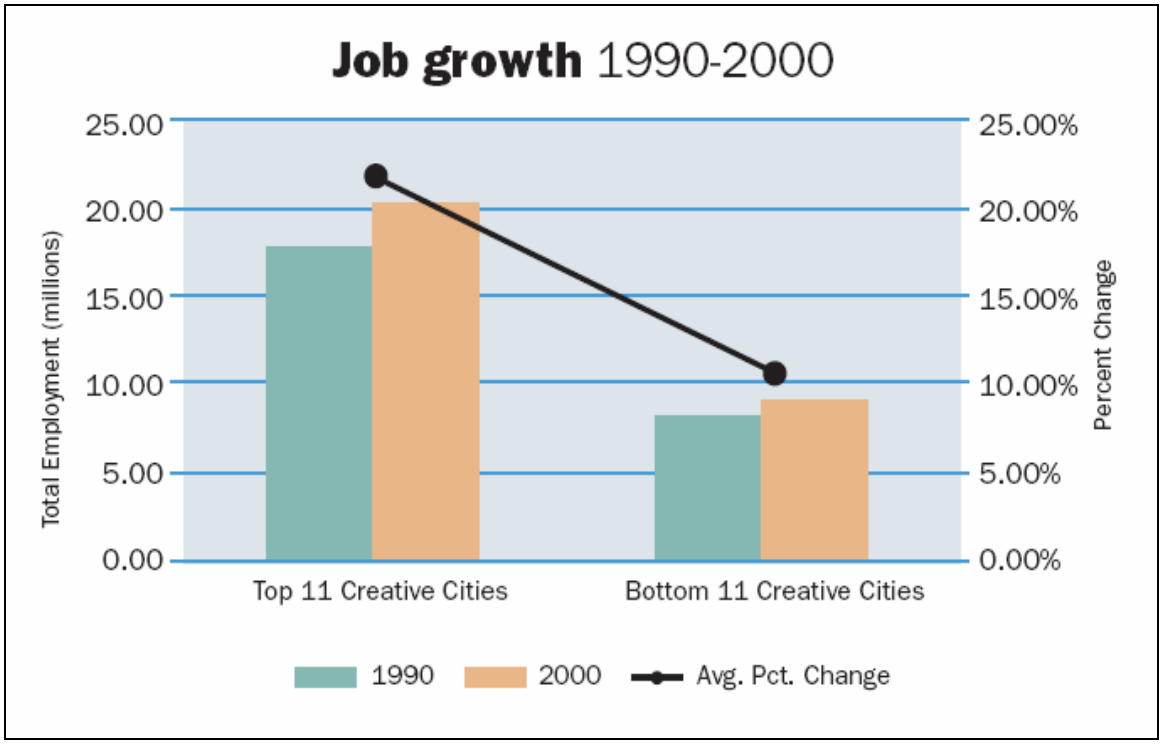
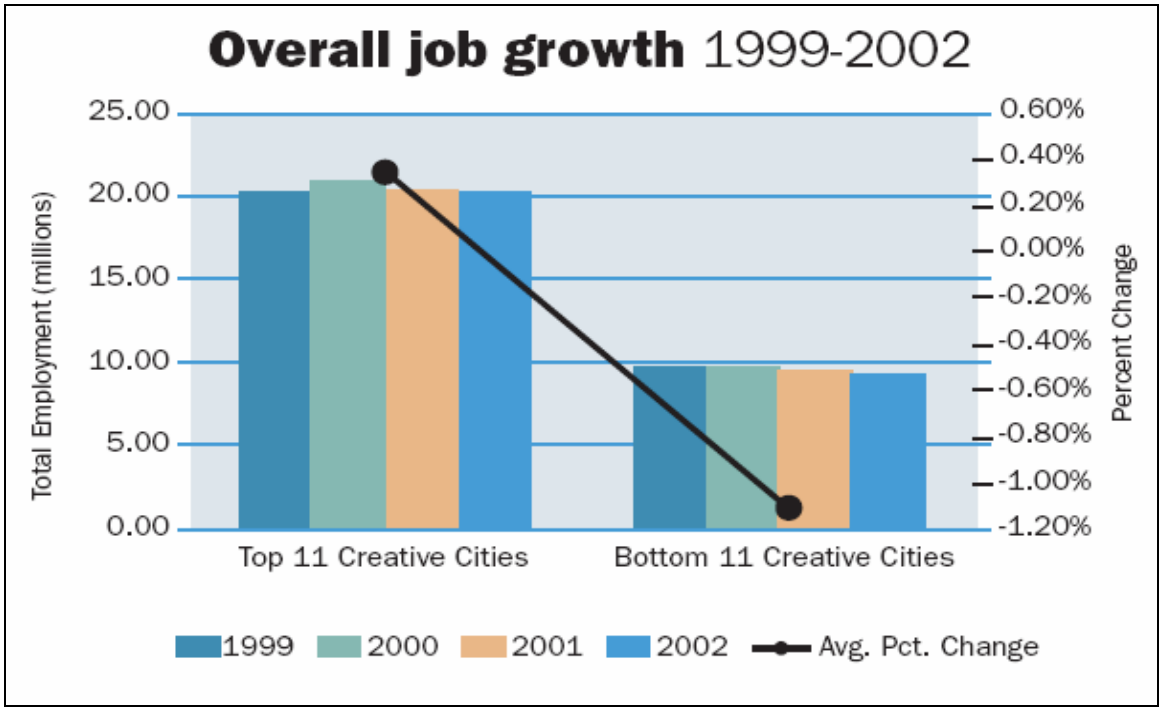


Figure 6.2 Overall Job Growth in the US, 1999-2002



Source: Florida (2004b)

When it comes to innovation, it turns out that regions which score high on the Creativity Index also were far more inventive than those regions scoring low.

Table 6.4 Innovation and High-Technology, Top and Bottom 11 Creative Cities

Patents 1990-1999	*Top 11 Large Creative Cities*	*Bottom 11 Large Creative Cities*
Per city average	2113	531
Average growth	11.56 %	4.94 %
Average per 10,000 residents (1999)	5.25	3.34
Total 1990-1999 all 11 cities	140,173	46,738
Total 1999 all 11 cities	23,240	5843

Source: Florida (2004b:6)

The theory of the Creative Class has been criticized, both regarding its economic rationale and for its homage to certain cultural values. Cities are of course not merely consisting of creative, young and single individuals, representing what Stone (2001) named «the Bridget Jones Economy». They also harbor nuclear families and other age cohorts than those in their twenties and thirties, together with a considerable share of working class and service class people.

But as a matter of fact, shown in table 6.5, the leading creative centers in the US also score high as child-friendly cities. This gives us another valuable dimension for how an appreciation of cultural variables may assist the facilitation of innovative environments and subsequently economic growth.

Table 6.5 Child-Friendly Cities and Overall Creativity Index Rank

Regions	*Overall Creativity Index Rank*	*Child-friendly Scores*
Austin	1	B+
San Francisco	2	A-
Boston	3	A
Raleigh-Durham	4	A-
Portland, OR	5	A-
Minneapolis	6	A-
Washington-Baltimore	7	B
Sacramento	8	B
Denver	9	B+
Atlanta	10	B

Sources: Florida (2004), see table 6.3 above; Population Growth: *Kid-Friendly Cities 2004*. (http://www.kidfriendlycities.org/2004/). Please see Appendix for details.

Other criticisms, especially from economic neo-conservatives, are politically motivated. Firstly, they see Florida's theories as a defense for big governments and as an ideological twist away from the kind of regulatory structures they claim really create jobs; free markets, private investments, and business-friendly policies – especially those favorable for Old Economy businesses (e.g. construction, manufacturing, wholesale). Related to this is the critique of the, admittedly dubious, causality between diversity and economic growth. Finally, they vision the emphasis on cultural values as symbols of fluctuating pop trends, and not being representative for «traditional» American values as a whole (Malanga, 2004).

None of these criticisms are particularly accurate. I will due to limitations of space not engage further in the cultural debate. Please see Hymowitz (2001) and Florida

(2004a) for discussions. Furthermore, Florida has never implied a direct causality between diversity and economic growth. The point is merely that places with low entry barriers, being receptive for diversity, have better opportunities of harnessing the creative skills of its labor pool.

By introducing other statistical reports, we can perform two small indicative tests on Florida's results. We use the same cities in both tests. First, we introduce a «Quality of Life Rank» and a «Metropolitan New Economy Rank», comparing the findings from these surveys with Florida's rankings. The first category is meant to represent values attractive to all family settings, and the second category represents a reasonable proxy on the overall economic performance within a metropolitan area.

Table 6.6 Overall Rankings of Creative Class Cities (regions of all sizes) – Top 5

City Regions	*Creativity Index Rank*	*Technology Rank*	*Talent Rank*	*Tolerance Rank*	*Quality of Life Rank*	*Metropolitan New Economy Rank*
San Francisco	2	6	12	20	2	1
Seattle	3	21	15	3	8	3
Boston	4	35	11	12	4	8
Portland, OR	7	12	45	7	5	15
New York	20	65	25	39	3	17

Sources: Florida (2004a:355); Mercer Human Resource Consulting, «Quality of Life Survey» (2004); Progressive Policy Institute, «The Metropolitan New Economy Index» (2001). Please see Appendix for details.

The next test introduces, in addition to the «Quality of Life Rank» and the «Metropolitan New Economy Rank», a «Coolness Index» and a «Growth Company Index». The first

additional index is meant to represent the attractiveness of cities for singles and un-married people, and the second additional index represents a mapping of entrepreneurial activity within 394 US regions regardless of business sector.

Table 6.7 Creativity, Tolerance, Quality of Life, and Economic Performance

City Regions	*Creativity Index Overall Ranking*	*New Tolerance Rank*	*Coolness Index Rank*	*Quality of Life Rank*	*Metropolitan New Economy Rank*	*Growth Company Index Rank*
San Francisco	2	6	9	2	1	36
Seattle	3	1	18	8	3	49
Boston	4	3	5	4	8	11
Portland, OR	6	19	24	5	15	29
New York	5	39	8	1	17	65

Sources: Florida (2004a: xxi, 355); Mercer Human Resource Consulting, «Quality of Life Survey» (2004); Progressive Policy Institute, «The Metropolitan New Economy Index» (2001); Forbes.com, «Best Cities for Singles – The Coolness Index 2004»; National Commission on Entrepreneurship, *High-Growth Companies: Mapping America's Entrepreneurial Landscape* (2001). Please see Appendix for details, especially concerning the «Growth Company Index Rank», where a part of the methodology disfavors Seattle in particular.

Note: In the «Growth Company Index Rank» only regions with 750,000 people or more are included.

I am aware of that this is a very small selection of city regions, and I recommend the reader to view them only as tentative indicators of the theoretical foundation posed in this analysis. Still, we end up with a pretty resembling image as shown in our previous tables, generally strengthening Florida's theories: A blend of diverse people, lifestyles, and businesses enhance economic growth.

Two Stories of the Creative Class Coming Up

In the next two chapters I will investigate how the blending of the three Ts work in real life. On the eve of the Internet revolution in the early 1990s, members of the Creative Class in both New York City and Tokyo took advantage of this new technology, blended it with talent, and lived out their dot.com-visions in two cosmopolitan cities offering a place for nearly every kind of lifestyle.

They are two revealing tales of how creativity, tolerance and economic growth interweave, but also – and in my opinion decisive for whole idea of technopoles – a strong reminder of how conventional innovation economics are of great importance when it comes to keeping technopolitan sustainability.

Notes

[1] Some of these measurements are: population with tertiary education; employment in medium/high-tech manufacturing; employment in high-tech services; public R&D expenditures; business R&D expenditures; the share of innovative enterprises in both manufacturing and services; and the share of sale to the new-to-the-firm products in manufacturing (European Innovation Scoreboard, 2003:17).

[2] The formal name of the Parisian technopole is «Association Cité Scientifique, Parcs et Technopoles en Ile-de-France Sud» (Castells and Hall, 1994).

[3] The old Innovation Index, which measured patents per capita for the year 1999, has been replaced by a ranking of average annual patent growth from 1990 to 1999. The Gay Index now includes both gays and lesbians.

[4] In this figure is also the Talent Index and the Wage Inequality Index included, where the former is a simple human capital measure of the percentage of the population with a bachelor's degree or above (ibid.: 253), whereas the latter is a statistical measurement of the difference between Creative Class wages and those of the Working Class and the Service Class (for additional class definitions please see Florida 2004a:328-29).

Chapter 7

New York City

Introduction

Today New York ranks as one of the top-three cities in the global urban hierarchy (Hall, 1999; Sassen, 2001; Smith and Timberlake, 2002), and it ranks among the top-fifteen epicenters of the Creative Class in America (Florida, 2002a; 2004a). 33.25 % of its employment (almost 3.1 million) belongs in the Creative Class, of whom 13.51 % belong in the Super-Creative Core (10th nationwide) (Florida, 2004a:368). It placed e.g. 13th overall on the New Creativity Index, and perhaps more surprisingly, got a B+ when analyzing child-friendliness.

The city has during the past century gained status as an utterly prestigious arena for finance, culture and art, and has a rich history of ups and downs. Today the city is often labeled as «a museum of contrasts», and «the premier city of the world, yet the paradigm of urban failure» (Winnick, 1988:7; Salins, 1988:1).

In light of our findings in previous chapters is New York a stomping ground for members of the Creative Class; it has great amenities for every possible lifestyle, a dense concentration of multicultural talent, and technology-based industries flourish. The story in this chapter is about the rise and fall of the multimedia district Silicon Alley. First I am going to introduce the background for the area's emergence. Secondly, I will investigate

its economic performance, and thirdly, I will trace the spirit of the Creative Class in outlining three cultural pegs manifesting the innovation culture of Silicon Alley.

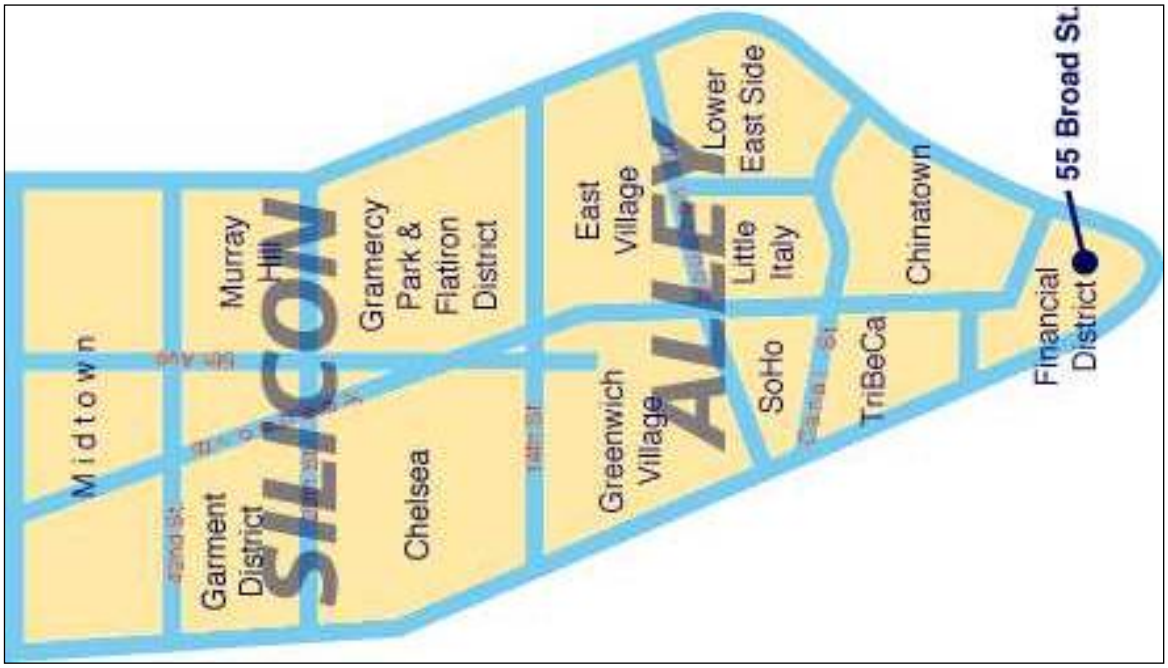
The Story of Silicon Alley

The history of Silicon Alley arose in the eve of the Internet revolution in the early 1990s, at a time when businesses were fleeing a city on the verge of bankruptcy with an eroding infrastructure and dwindling tax rolls (Goff, 1996; Marcus, 1999).

A large conglomerate of advertising, publishing, broadcasting, telecommunications, mass entertainment, contemporary art, and fashion gathered in a collection of overlapping districts from Broad Street at the south end of Manhattan, moving north to the SoHo and Greenwich Village artistic communities, through the Times Square entertainment district and on up to the publishing houses north of Times Square and the advertising agencies along Madison Avenue (Roche, 1997; Mosco, 1999). Florida (2002b) described the area like this:

> «It lies at the crossroads of the region and adjacent neighborhoods have the diversity and creative culture required today for competitive advantage. Combine this with the financial expertise and capital long available here and you have what could be a natural setting for the growth of new ventures building on existing strengths».

Figure 7.1 Silicon Alley, New York City



Source: http://www.ite.poly.edu/55case/ gfx/alley1.gif

It really added speed sometime during the winter of 1993, where a group of people got together at a Cyber Salon to talk about New York's New Media scene. Founding fathers and upcoming personalities quickly connected, and by the next year the group had become the New York New Media Association (NYNMA), an advocate for NYC's clique of Web designers. Its first public activity was to have a gathering called CyberSuds, a Silicon Valley-style beer bash. These monthly events were a hit, attracting all sorts of talent and social skills mainly from the city itself, but also from the rest of the country and other nations (Kait and Weiss, 2001). Housing almost 40 % foreign-born people, of whom a considerable number belong in the Creative Class, makes New York City a highly globalized community and a large pool of diverse creativity.

In 1995, this loose agglomeration of innovators had adopted the name Silicon Alley, coined by New Media entrepreneur, Wall Street veteran and former Alex. Brown & Sons analyst Mark Stahlman as a pun on Silicon Valley.

Whereas California was more focused on the technology aspect, New York concentrated on «content», thereby luring employees whose backgrounds were more ingrained in the arts and media.[1] Jobs in New Media, as it were to be named, started to become a major segment in the city's labor profile. Between 1995 and 1999, employment in New Media shot up over 500 %, from some 27,000 to 138,000 people, and computer-services jobs in New York increased nearly threefold, to more than 43,000 – double the national growth rate. Agency.com, founded in 1995 by NYNMA members Chan Suh and Kyle Shannon, employed 220 people in September 1998, 670 a year later, and more than 1000 by the time it went public late in 1999 (Malanga, 2000).

Mosco (1997) concluded that New York's software, electronics, and multimedia companies led the way with an increase in venture capital investment of $111.3 million in 1996 more than doubling the 1995 total of $49.5 million.

The Breakthrough

The first break came in June 1997, when DoubleClick, a company based on on-line advertising (in 2001 the largest in the world, serving five billion banner ads per week) raised a $40 million round of venture financing, which was then a record for an Internet company. Of the six venture capital firms that invested; only one – Venrock Associates –

was from New York. «Content companies» were generally considered too risky for venture capital firms (Kait and Weiss, 2001).

This image was soon going to change. Investors, both so-called «angel investors»[2] and venture capitalists (VCs), from around the nation put about $185 million into New York's New Media companies in 1997 and another $287 million in 1998. Californian venture capitalist firms like Kleiner Perkins and Hummer Winblad, which funded amongst others iVillage and theknot.com, was met by East Coast firms seeking to develop their own territory. Alice Rodd O'Rourke, former head of the New York State Department of Economic Development, points at this as an important social phenomenon symbolizing the cultural rivalry between East and West (Kait and Weiss, 2001:152). Bob Lessin, CEO of Wit Capital and former vice chairman of Salomon Smith Barney, invested in no less than 40 companies in one year. Esther Dyson, chairwoman of EDventure Holdings and founding chair of ICANN, the governing body that administrates Internet domain names in New York, also became a major investor.

The real change came with the creation of Flatiron Partners, established by Fred Wilson and Jerry Colonna with money from Chase Capital Partners and Softbank. They became the first major VC fund set up specifically to fund early-stage technology start-ups in New York City (Indergaard, 2004).

For the first half of 1997, New York State attracted $120 million in new-venture capital, placing it fifth behind number one California, then Massachusetts, Texas, and Tennessee. While that is a 17 % jump over 1996, it still puts New York far behind California, which garners the lion's share of venture funding – $1.13 billion (Berman, 1997). In February 1998, DoubleClick went public in a $60 million offering, and the

stock rose 57 % in its first day of trading. Initial public offerings (IPOs)[3] of EarthWeb and theglobe.com the same year were amplifying events. On November 11, 1998, EarthWeb, an online information resource provider, went public at $14 and closed its first trading day at $48.69. The 248 % gain was, for the time, the second-biggest debut of any IPO in history. Just two days later, online community builder theglobe.com went public in an IPO priced at $9 a share. In its first day, the stock opened trading at $87 a share. It closed the day at $63.50 with a 605 % rise, and set a record for IPO performance that still stands (Malanga, 2000; Indergaard, 2004).[4]

Despite the tremendous successes of a few Alley ventures, such as Razorfish (Kanarick was worth $200 million at the age of 33), DoubleClick, and theglobe.com, the majority of the new millionaires were rich only on paper. Realities in the American and global economy started to set in. On March 10, 2000, the NASDAQ Composite Index, containing mostly technology shares, hit its all-time peak of 5.132 (Stiglitz, 2003:5). But later the very same month, an article in *Barron's* magazine issued a forecast that over 200 Internet companies would run out of money in less than two years. With a merger between AOL and Time Warner pending, analysts began to realize that the valuations of the Internet companies were way out of step with the rest of the market – and the bubble officially burst.

This had disastrous effects on Silicon Alley. Companies like Razorfish, iVillage, theglobe.com and agency.com were clobbered, losing over 90 % or more of their total stock value by the end of the year (Marks, 2001; Kait and Weiss, 2001; Stiglitz, 2003).

A New York Culture of Innovation

What is most striking about the Silicon Alley phenomena is the cultural swirl that occurred right from the start. The blending of technology, talent and tolerance was piercing through Manhattan. As Kait and Weiss (2001: viii) describes it:

> «Digital sweatshops proliferated, housing tribes of talented young people at a time of extraordinary opportunity, wild excess, and massive shifts in culture, all fueled by the rapid changes in technology».

Paradoxically to the virtual nature of the products these companies produce, they seem to be very precise in operation with lots of face-to-face meetings and intense personal contacts. William Schrader, CEO of PSINet, puts it this way: «If you are 45 minutes from your clients in this industry, you get the business. If you are three hours away, you don't» (Malanga, 2000). Janet Stites, cofounder of newsletter *Alley Cat News* together with Anna Wheatly, continues:

> «big city that it is, one can hear people discussing their business plans in parks, on the subways, in coffee shops. Once almost a foreign concept to the New York area (particularly the city), small business and entrepreneurialism have surfaced from the shadow of the alleys and skyscrapers to become the darlings of economic development and Wall Street – the core of the big apple» (Stites, 1999).

We must not forget that New York City also is well equipped with about a dozen universities educating New Media employers from all over the world, many of these are world class institutions, especially symbolized by Columbia University and New York University.

As the previously mentioned Cyber Salons progressed and grew in popularity, Stahlman, together with venture capitalist Brian Horey, figured out that it was time to institutionalize the whole process. With the foundation of the New York New Media Association (NYNMA) they stated a mission of «galvanizing a community in New York» (Kait and Weiss, 2001:16). They regarded Cyber Salons and CyberSuds to be tolerant community-building mechanisms, bringing together a vast variety of people sharing the same interests in the future of the Internet. Jamie Levy, CEO of Electronic Hollywood, threw early CyberSlacker parties in the East Village, inviting not only computer-interested people, but also artists and movie stars. Courtney Pulitzer, a grand-niece of Joseph, began arranging famous monthly cocktail parties for the most prominent people in the business.

The personal relations involved draw a complex map of who knows who: Nicholas Butterworth, CEO of MTVi group who helped build sonicnet.com together with close friend and active entrepreneur Tim Nye, was a long-time pal of Steven Johnson (roomies in college), a PhD of Columbia University and cofounder of FEED magazine together with Stephanie Syman, who in turn knew major venture capitalist Esther Dyson. Butterworth also had personal contacts with Becky Savell, who at one time ran the music channel for Prodigy, and Prodigy CEO Ed Bennett. Butterworth also knew from college Rufus Griscom and his girlfriend Genevieve Field (founders of nerve.com, a company run by these two together with Jack Murnighan and Joey Cavella, Griscom's sister Amanda's boyfriend). Razorfish was started by childhood buddies Craig Kanarick and Jeff Dachis, and agency.com was started by Chan Suh and Kyle Shannon, an ad salesman and an actor who for the first time met online, who grew up parallel in the Alley and had

mutual friends, some of them at MIT and some in the venture capitalist business. Seth Goldstein, venture partner at Flatiron Partners, lived in 1994 on the couch of college buddy and journalist for the *Observer* Jeremy Haft, before Goldstein moved into the apartment of 22-year old i-Traffic founder Scott Heiferman. They were all acquaintances of New Media professor Clay Shirky at Hunter College. Another professor, Red Burns, founded the Interactive Telecommunications Program at New York University in 1979 and has trained many of the Alley entrepreneurs, including Stacy Horn, founder of Echo. Heiferman knew Suh from earlier work collaborations at Sony, and he met by accident Omar Wasow, executive director of blackplanet.com, on a bus ride from Chicago to New York.

«Everybody» knew the most charismatic personalities such as Josh Harris, founder of Jupiter Communications and pseudo.com, Scott Kurnit, founder of about.com, and Craig Kanarick, cofounder of Razorfish. Harris' transformed the main office building at 600 Broadway NY (recognizable from afar by the enormous DKNY painting of the city on its side) from standard office design to a colorful and avant-garde central base of operations (Kait and Weiss, 2001:240).[5]

Three Cultural Pegs

Beside the obvious economic malfeasance that led the bubble to burst, which reminds us of how innovation theories not by any means should exclude conventional economic wisdom, the innovation milieu of Silicon Alley still remain as one of the most illuminating examples on the importance of social interaction between all sorts of

culturally relating people – in this case, the Creative Class – in the early phase of novelty creation. Silicon Alley reporter Jason Chervokas puts it this way:

> «It was culturally fascinating. I remember going to a TotalNY party in the summer of ’95 and thinking, this must be what San Francisco was like in 1966, before the world discovered that there was an actual subculture and something to happening and something to productize» (Kait and Weiss, 2001:23).

The gatherings did not entirely mirror a lust for New York-style partying, but were honest representations of people’s visions. As Seth Goldstein remembers; «there was a real appreciation for innovative thinking» (Kait and Weiss, 2001:223). Nicholas Butterworth completes this picture:

> «Like many people of my generation or my age or my tendencies, I never planned to have a corporate job or be a businessperson per se. I just wanted to do interesting and intellectually challenging things that I though had some social value» (Kait and Weiss, 2001:165).

To a certain degree there is a similarity between New York and Silicon Valley, of which there can be outlined three specific elements for their successful innovation culture. The first is the deliberate community-building mechanisms that were present right from the start, having a shared sense of future visions, attracting a mix of creative people and professions in order to develop a cultural environment, «a real camaraderie» as Kyle Shannon named it, for enhancing innovation. This means having a high level of tolerance and low entry barriers for new ideas.

Secondly, as noted in the case of Silicon Valley, the centrality of work was extremely important for the early start-ups. Talented Alley entrepreneurs focused heavily

on what Kyle Shannon recalls as «creating an environment that supported flexible routines» (Kait and Weiss, 2001:65). The new business world of Internet was out in the open and ready to be explored. Furthermore Shannon describes how it was in the beginning; «seven days a week, until you literally can't do it anymore, and you just go home to get enough sleep to take a nap and come back and do it again. For seven or eight months it was just hell on earth» (Kait and Weiss, 2001:34-35). Many workers put in 60 or more hours per week, turning the office into a home away from home. There were 24-hour shifts and people who worked on regular computers were immediately told to get a laptop, so they could work everywhere.[6]

Thirdly, there seems to be among the Silicon Alley entrepreneurs a shared agreement of appreciating and grasping the un-measurable feeling of New York City's urban cosmopolitaness. John Young, former president of Tribal DDB, stated that «New York is just a society of ideas», and venture capitalist Esther Dyson praises the diversity of the New Yorkers, and «that people are less American here and more cosmopolitan, whatever that means» (Kait and Weiss, 2001:181-89).

A Comment

We see from this brief historical note that the Creative Class in action is a complicated and messy process to catch. But still it remains as a lively image of how future innovation theories should appreciate people's motives and actions within the innovation process to a higher degree than before. It is people who run the cultural ecosystem they live and innovate in.

Moreover, it serves a real-life lesson of what can happen if the need of being in opposition to established business structures overrules the need for economic sustainability. It is a good reminder on how the economic system is global and affected by a number of forces way outside any innovation milieu, something which cannot be excluded in whatever innovation perspective one advocates.

Now, let us take a look at Tokyo, a city entertaining many similarities with NYC, but also a great deal of differences.

Notes

[1] In fact, the uniqueness of New York was due to the integration of technology and design, gathering rich pools of artists, graphic designers, writers and storytellers (Indergaard, 2004).

[2] An «angel investor» is an individual investor who invests in very-early-stage companies, generally at the idea stage or within the first few months of its life. These investments are usually highly speculative and can often come to the premium to the entrepreneur, but are invaluable in building a company to prepare it for an institutional investment (Kait and Weiss, 2001:331).

[3] IPOs, «Initial Public Offerings» is the first offerings of a share on the market; typically, they are sold at a price considerably below the value of which they rise almost immediately after being issued, which is why getting IPO shares is so valuable (Stiglitz, 2003:356).

[4] Even comparing New York with Silicon Valley makes an impressive figure. In 1999, 127 Internet companies went public in California. But those companies were mostly spread across the state's suburban landscape: only 16 were in San Francisco proper, and another 13 in nearby San Jose. The very same year, 37 New York Internet companies went public, compared with 19 New Media IPOs in the Boston Route 128 corridor and 23 in the entire state of Texas, reputedly hot locations for technology companies (Malanga, 2000).

[5] His personal life was also a common theme in the media; Harris' New Year's Eve 2000 party lasted no less than one month and cost a million dollars (!). Kanarick also made a brand out of himself by having an «evangelistic» belief in the Web, listening to punk rock, his unconcealed and outspoken contempt for traditional business hierarchies in NYC, rollerblading to work, constantly changing his hair-color (to match his multi-colored suits), buying a '65 Chevrolet Corvette Stingray convertible of the street (and was photographed by the *New York Times* hopping over the door in a flashy red suit and peroxide-white hair).

[6] One reason for this working atmosphere is that workers were usually attended with stock options, shares of the company to be purchased in the future at a significantly reduced rate (Indergaard, 2004).

Chapter 8

Tokyo

Introduction

Tokyo has similar to New York long been a national and global center for innovation, culture, business, and finance (Nakayama, 1991; Hall, 1999; Sassen, 2001; Saito, 2001; Smith and Timberlake, 2002).[1]

There has not been any research upon (yet) upon the Creative Class in Japan. Indicative evidence shows that it is a more loose and undefined group of individuals than in the US. It is therefore not my intention to make a direct comparison between New York City and Tokyo, but only to point out the global scope of the need for an appreciation of cultural variables in future innovation theories.

It is important to note that New York and Tokyo are very different cities. Their differences are, I would claim, results of historical consolidations of economic and cultural traditions. Tokyo, for instance, is not at all the same melting pot of ethnicity and cultural representations as NYC. This has mainly to do with language barriers and the national immigration profile; over 90 % of resident foreigners come from either Asia (74 %) or South America (19 %) (Kashiwazaki, 2002). However, Tokyo is one of the leading Japanese regions for both domestic and international migration, and furthermore one of the most liberal Japanese cities when it comes to low entry barriers for women,

immigrants and offbeat people (Hidenobu, 1995; Kashiwazaki, 2002; Kuratani and Endo, 2003).

Based in Tokyo, the creative Japanese «class» has a strong relationship both personally and structurally with its US counterparts in New York/Silicon Alley. We can find support for this in the words of Ken-ichi Imai, Director of the Board at Stanford Japan Center, reviewing the significance of the Creative Class theory in Tokyo:

> «Today Tokyo is filled with people from every stratum of society, and so the capital city is highly tolerant in admitting all sorts of unique people from all over the world. It is a melting pot where just about everything is accepted. It certainly fulfills the diversity criteria for a developing city preached by the US urbanologist Jane Jacobs, and Tokyo is certain to become a mammoth cluster unique in history» (Imai, 2004).

By looking at the employment numbers by occupation we find support for the progression of a Japanese Creative Class. The occupations constituting the Creative Class in other parts of the world are also a growing category also in Japan.

Table 8.1 Total Employment by Occupation, Japan, Selected Years and Occupations (Thousands)

Occupations	*1994*	*1997*	*2000*	*2003*
Total	64530	65570	64460	63160
The Creative Class	7780	8240	8560	9060
Administrative and managerial workers	2350	2260	2060	1850
Clerical and related workers	9430	9400	9110	9170
Service workers	6030	6370	6770	7290
Production and related workers, transport equipment operators and laborers	22600	22780	21520	20040

Source: International Labour Organization (http://laborsta.ilo.org). Please see Appendix for details.

Moreover, the number of employees in other occupational categories than the Creative Class is shrinking, except in the service sector.[2]

In this chapter am I going to concentrate on the story of Bit Valley, which similar to Silicon Alley blended technological development, talent, and Tokyo's cosmopolitan receptiveness for people and ideas in the 1990s. First am going to introduce the some background history, before I turn to the innovation culture of Bit Valley. Finally, I will try to show how an inclusion of cultural variables may cause problems within the realms of innovation.

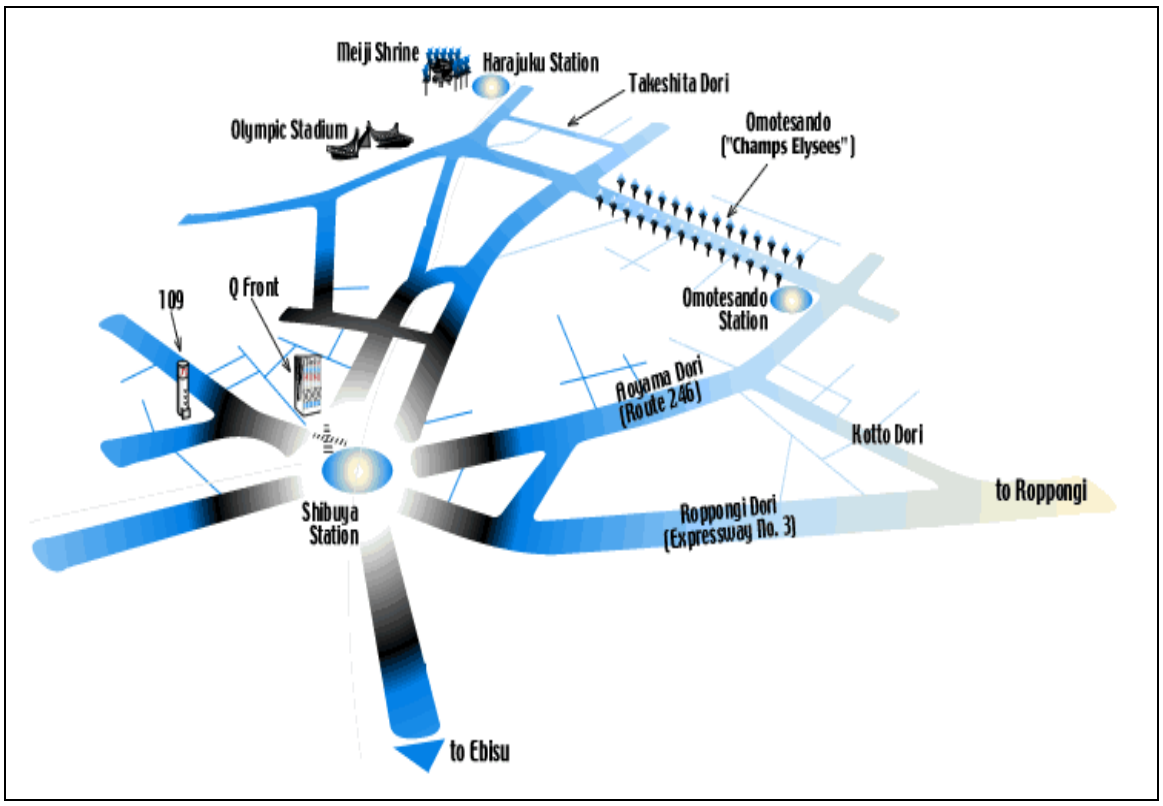
Bit Valley

«Bit Valley», the high-tech neighborhood rooting in the Shibuya district, is conceptually related to Silicon Valley, and also to New York's Silicon Alley. Company head Satoshi Koike and his colleagues at Netyear Group (an Internet business incubator and consulting firm) returned to Japan in February 1999 to take advantage of the then fledgling Internet revolution by setting up the Tokyo branch of their Silicon Valley-based company. Together with Kiyoshi Nishikawa, president of NetAge, also a consulting venture, they saw the potential for turning their groups into an association and working to build Tokyo's version of Silicon Valley – Bit Valley[3] (Takezaki, 1999). The organizational result was Bit Valley Association (BVA).

Bit Valley runs according to the writers at *JapanInc*. (Takezaki, 1999; Clark, 2000a; 2000b; Murphy, 2001) from Shibuya, the stomping ground, fashion Mecca and undisputable trend center of Japanese youth culture, up through to Harajuku and

Omotesando (and stretches over Ebisu, Azabu, Hiroo and even Roppongi on towards Otemachi, Tokyo's financial district).[4]

Figure 8.1 Bit Valley, Tokyo



Source: http://www.japaninc.net/

According to a survey by Fujitsu Research Institute, of the 1300 Internet businesses in Tokyo as of mid-2000, 40 % were located in Minato and Shibuya wards (Murphy, 2001). 48 % of Tokyo's New Media Companies are founded after 1994. 39 % of Tokyo's New Media Companies hold less than 30 employees each. On the other hand, companies with over 100 employees occupy 11 %. The average number of employees is 78, way above both San Francisco (26) and New York (13) (http://www.bitvalley.org).

A survey by the Ministry of Land, Infrastructure and Transport found that as of September 2000 there were around 450 software, Internet, or information processing companies within one kilometer of Shibuya station, second in concentration only to Akihabara, which had around 650 (Murphy, 2001). Some of these firms are Rakuten, Japan's biggest Net shopping mall, with 850 cyber merchants; Cyber Agent, which runs the biggest online ad network in Japan generating 150 million ads each month for more than 200 Japanese corporate clients; and Net Dealers, who serves as an online link between new car buyers and vendors, providing competitive price quotes from a network of some 60 dealers (Clark, 2000b; Murphy, 2001; http://www.bitvalley.org).

Just as in the case of Silicon Alley, the political authorities implemented a facilitating role. But it happened in less forceful terms than in the traditional Japanese state-led corporate governance (see Johnson, 1982; Okimoto, 1989).[5] Representatives from the MITI approached the BVA at the end of 2001 for advice on venture policies in the Tokyo area. The Shibuya ward office, the Tokyo city government, and the Shibuya Chamber of Commerce have also been involved (Murphy, 2001).

The Innovation Culture of Bit Valley

Shibuya, colorfully depicted in Sofia Coppola's *Lost in Translation*, is probably the culturally most vibrant area in Tokyo (Clark, 2000a). The common denominator is the blending of technological innovations, talented people, and Tokyo's tolerant receptiveness for diversity.

Hiro Sasaki, one of the founders of Netyear and a Bit Valley Association director, says: «We want these companies to be very successful – economically and socially. To

that end, the BVA has to do something more meaningful than just networking» (Murphy, 2001). Large (2000) name them «Yummies»: young, upwardly mobile, market-savvy Internet entrepreneurs of the iGeneration who are «putting the zing into Japan's New Economy» (ibid.).

This urban buzz manifested itself into the BVA, operating as the backbone of the Tokyo Internet community, being an equivalent community-building mechanism to the NYNMA in New York and the Peppermill in Silicon Valley. It boasted in the year 2000 a membership of more than 6000 people; about two-thirds of whom are said to be «Netrepreneurs» (Large, 2000).

For the entrepreneurs in the BVA, one of the more popular events was the association's hosting of periodic «non-virtual» gatherings in the Shibuya area to allow members to swap startup opinions and offer mutual encouragement. Participant numbers at the gathering, called «BitStyle» increased every month, and some 200 regulars usually attended, as well as TV crews, artists, Web designers and journalists. Its February 2000 meeting in Tokyo's Roppongi hot spot discotheque Velfarre hosted over 2000 people came to exchange business cards, establish networks or meet venture capitalists. Often called Japan's Mr. Internet, Softbank's Masayoshi Son, hired a private jet to fly from Europe to be there. Also there was Central Bank Governor Masaru Hayami, as well as the controversial Tokyo governor, Shintaro Ishihara. Kiyoshi Nishikawa, president of NetAge, puts it like this:

> «I'm glad that Japanese society has finally come to accept the concept of entrepreneurship … In the past, large corporations played a major role in this society, but they don't fit well into the idea of a networked economy, where quick decision-making is crucial. What we need here are flexible

> entities that can take action quickly, and that are not hampered by traditional Japanese business customs» (Takezaki, 1999).

Lifestyles were increasingly influencing the business climate. Net schools like Digital Hollywood, which has tutored about 13,000 students in its half-decade history, recently set up a «Midnight School» offering lessons in Web design from 1 a.m. to 6 a.m. «It suits current lifestyles», says Digital Hollywood spokeswoman Hitomi Sano, explaining that about 80 % of students go into Web-related work, as designers, producers, directors or programmers. She adds; «Shibuya has always been the center of subculture. So it's not surprising that 'information fashion' is also focused here» (Large, 2000).

The work ethic is another feature which clearly derives hybrid experiences from Silicon Valley and traditional Japanese culture. Shigeo Ozeki, the CEO at Internet marketing services firm axiv.com, have 19 full-time employees who all work long hours, many from 10 a.m. to 2 or 3 a.m. seven days a week. He says: «But it depends on where they live and if they have to go home or not. Often there just isn't time to go home». A survey last year by the *American Chief Executive Magazine* suggests that dot.com-CEOs in the US work between 15 and 35 hours *more* than their 65-hours-per-week comrades in the bricks and mortar sector. Anecdotal evidence indicates that Japanese CEOs of Internet startups work the same hours (Murphy, 2001).

The Japanese Internet economy has also another dimension. Some profess selfless motivation, and still see their economic ventures as a contribution to the development of the Japanese society. Gluegent's Masataka Kurihara says he hopes his company will act as a beacon to others thinking of setting up a new firm. Other CEOs say they hope their business will help Japan's economy. «I run across that quite a bit», says Allen Miner,

CEO of Sunbridge. Though it can come across as a curious form of economic techno-nationalism, Miner sees it more as an expression of a sense of corporate social responsibility. It appears to be a strongly Japanese phenomenon. «I can't imagine an American entrepreneur saying, 'I'm starting my tech company because it will make the American economy stronger'», he continues (ibid.; see also Ostry and Nelson, 1995).

The Internet world is on paper a mere meritocracy and creativity as such gender neutral (Florida, 2004a). Still the prospering Internet business stories in Tokyo come from males. Women have a harder time than men in Tokyo. But within the top Internet firms in the late 1990s a couple of women reverse this pessimism, including Tomoko Namba, the CEO of DeNA Co., which runs bidders.com, and Merle Okawara, the CEO of eBay Japan.

Additionally, many of the women who are involved in Japan's Internet world run businesses that focus exclusively on women, as opposed to the broader marketplace. Examples of this are Meiko Towada, who ran esampo.com, targeting services and products for women, or Kikuko Yano, who runs cafeglobe.com, a portal site for women. Giftken.com's Yumi Kuwana highlights a lack of government support in helping women entrepreneurs start from a more level playing field as one reason for the underrepresentation of women. She would like to see support programs in Japan for emerging businesswomen, similar to those in the United States (Murphy, 2001).

Other issues are family-based: Young and single, Naoko Yagi took the plunge to leave Toyota and join startup eAccess. She says some women are instructed by the traditional gender image by their parents, and told to seek jobs at e.g. Toyota partly «to

find a husband; there are many couples within the company». But Yagi switched careers with the full support of her «untypical» parents (ibid.).

Urban Advantages

Tokyo has an entrepreneurial advantage compared to the rest of the country. The historical reasons for concentrating R&D in the Tokyo region included according to Hall (1999:475) «the ease of recruiting labor from the region's hundreds of universities, the general scientific atmosphere, and linkages with other laboratories established by government or by cooperation».

In 1997, 2.09 of every 100 people of working age wanted to establish their own businesses (based on responses to a survey of workers wishing to change jobs by starting their own businesses). This is 1.5 times higher than the national average of 1.44, and 17 % higher than the figure for second-ranked Kanagawa prefecture (ratio of 1.79). A further advantage pointed out in a survey done by Tokyo Metropolitan Government is the geographical proximity, which enhanced networking and recruitment of personnel. Moreover, they appreciated the good transportation infrastructure, the size of and closeness to markets, finance possibilities and industry clusters. This was particularly important for information and content industries, together with venture businesses (Kuratani and Endo, 2003).

Related to this is the impressive educational infrastructure present in Tokyo, with world class universities like Tokyo University, Tokyo University of Engineering, and

Tokyo Academic Park, the extensive development of Internet backbone capacity in metropolitan Tokyo, and the liberalized Internet Service Provider (ISP) market.

Moreover, there has been a significant migration into Tokyo despite the high prices on real estate, and furthermore is this trend marked by a considerable share of highly educated females, which brings along large portions of unleashed creativity and talent. This is particularly important since Japan score low on female labor force participation compared to other industrialized countries (OECD, 2004:21). Together with an increase in highly educated population, from 23.7 % in 1980 to 35.3 % in 2000 (the national average was 13.7 % respective 24.6 %), is the concentration of human talent very dense (Kuratani and Endo, 2003).

Lifestyle Clashes

Not all people cherished the BVA's partying and informal networks, for different reasons. An affluent lifestyle carried out by a large number of young Japanese professionals and employees imitating the consumption patterns and consumer attitudes of their equivalents in e.g. New York and London, is establishing a growing conflict between traditional Japanese values and «Western» consumerism (Nitto and Shiozaki, 2001).[6] Hideo Kobayashi, vice president at eAccess, complained that «the people who like the Bit Valley style prioritize too much human relations and not business relations». Bit Valley was furthermore not represented in submissions to the influential Telecommunications Council, which advises the government. The council is not at all glamorous, but it is powerful and has a huge say in deciding the shape of telecom deregulation and thus the Internet in Japan (Murphy, 2001).

Kurihara says his firm is there to serve workers' lifestyles rather than the other way around. He reckons the standard Bit Valley lifestyle of night work and a junk food diet is a disaster. «If you work too hard you have no performance. Staff has to go home at night, take a bath, and sleep in their beds» (Murphy, 2001).

CEO of eAccess, Sachio Semmoto, one of the most respected figures in the telecommunications industry, says he appreciates the sentiment behind the Bit Valley idea, but questions their managerial qualities: «Management is the problem. They should acquire the basic elements of entrepreneurship in marketing, organizational structure, personnel issues, and financing» (ibid.).

Tokyo was not hit as hard by the economic recession as New York, although the Asian economic crisis in 1997-98 had an incremental impact on bank loans and the Japanese stock market, where Nikkei lost about 25 % of its end-1996 value by November 1997 (Sassen, 2001:81). Bit Valley experienced although, almost exactly in the same manner as their counterparts in New York, a financial crash around the millennium turn. One example is the mobile phone seller and venture capitalist Hikari Tsushin, which invested in many Bit Valley companies. Hikari Tsushin was the dream company at the beginning of 2000, until its less-than-transparent financial practices came to light, sending its stock into a tailspin from a 2000 high of ¥241,000 to as low as ¥1,500 by the beginning of 2001 (Murphy, 2001).

Reasons for the lower number of Internet failures were simply because the Internet bubble here was a much smaller and shorter affair than in the US, partly due to dependence on foreign ICT-equipment, but also because the government injected public money into banks in order to stabilize the financial system (Murphy, 2001; SHJ, 2004).

A Comment

As in the case of New York, this brief historical note on Bit Valley express how the innovation culture in its more successful cases builds upon a blending of technology, talent and tolerance. The resemblance to New York and Silicon Valley mirror my main point in this dissertation, namely that cultural variables have a significant influence on the innovative performance. Secondly, it symbolizes the importance of acknowledging these variables regardless of place.[7]

On the other hand is it a need for a lot more research on Tokyo as a Japanese urban symbol of the Creative Class. Tokyo differs from New York in particular when it comes to converting the talent of immigrants into economic growth. Japan as a whole will, unless opening up for inflows of creative immigrants, soon face problems with an aging and shrinking population and thus its economic productivity (UNDP, 2004:102). Paradoxically perhaps, in Japan's global economy, the most important source to economic growth – flows of people – has not been liberalized in the same manner as flows of goods and capital. Secondly, touching the subject of lifestyle clashes, it could represent a preview of a cultural transition in the Japanese society which has more profound consequences than we can understand at the moment.

My intention here was to show that the interweaving of the three Ts cannot be limited to a certain region or country; on the contrary, it is symbolizing a common transformation in those areas of the global society where innovation performance progressively more is a product of people's values and cultural processes.

Notes

[1] One of the latest power demonstrations of Tokyo's innovative strength is its launching of Tokyo Academic Park (TAP), which opened in July 2001 in the Tokyo Waterfront region. It comprises three facilities: Tokyo International Exchange Center, National Museum of Emerging Science and Innovation, and AIST Tokyo Waterfront (http://www.tokyoacademicpark.jp/).

[2] Within this service category there are in addition some professions which in the US case belong in the Creative Class, e.g. hairdressers and cooks.

[3] Hiro Sasaki, one of the founders of Netyear and a Bit Valley Association director is generally credited with coining the name Bit Valley – a play on words in Japanese between *shibu* (bitter) and *ya* (valley). The name avoids the coffee dregs connotation of the first noun, and neatly summarizes the digital revolution genesis of many of the area's enterprises (Takezaki, 1999).

[4] Masayasu Ariyoshi, CEO of product evaluation site «Power to the People», says furthermore that geography in the big picture has little to do with it: «In my mind, Bit Valley doesn't associate with physical locations. It is more of a figurative community» (Murphy, 2001).

[5] Another reason for the modest governmental intervention in Tokyo was their struggles with implementing the Technopolis program mentioned in chapter 5. This program was organized for a decentralization of high-tech industry, and influenced the industrial and innovational profile of Japan and Tokyo extensively. This program influenced the industrial and innovational profile of Japan and Tokyo extensively. In the beginning of the 1980s Tokyo's share of information-processing workers dropped from 61.1 % in 1980 to 55.8 % in 1985, and the share of software industry fell from 58 % in 1981 to 32 % in 1985. In the 14 technopolises present in 1985 the establishment increased by 425 % in software, and by 34 % in information processing (Castells and Hall, 1994:138).

[6] This has also a side-effect by increasing urban gentrification, something which until the 1990s has been less visible in Tokyo than in e.g. New York's Manhattan, which houses some of the most expensive and the most miserable housing in the city (Sassen, 2001).

[7] Similar findings on the growth of a Creative Class have occurred in Europe, Canada and Australia (Creative Intelligence Newsletter, 2003; Florida and Tinagli, 2004; Gertner, 2004).

Chapter 9

Cosmopoles

At the Crossroads

I have in this dissertation investigated bits of the history, geography, and practice of two intersecting concepts which have been a highly visible feature of global high-tech development since World War II; namely technopoles.[1] We have seen that despite the numerous attempts of cloning the basic characteristics of the technopolitan paragon Silicon Valley, the subsequent technopoles have been a mixed bag in terms of success.[2]

However, it has turned out that some cities and city regions, with little or no references to specific technopolitan strategies, offer more impressive scores on several innovation rankings, cultural indexes and economic growth charts than the more or less pre-designed technopoles. Apparently, this is an effect of their blending of economic groundwork, technology, talent, and cultural amenities. Cities scoring high on all these variables are most likely to be prosperous when measuring social qualities and economic growth.

Yet seeing the danger of instructive schematism, I am from the analysis in this dissertation left with three preliminary guidance pointers and one conclusive revelation:

There Are No Such Things as Technopolitan Blueprints

No matter how admirable we find the story of Silicon Valley, the overall finding is that each technopole has to outline a specific list of strategic means and ends in order to achieve what it is thriving for. This is especially important when considering facilitation of social and cultural qualities, since these most often are linked to local identities and the uniqueness of different urban places. In addition, cultural transformations do not usually happen overnight. New York City had Greenwich Village a long time ahead of Silicon Alley, and Shibuya has been a subcultural district in Tokyo years before Bit Valley appeared. Segal's comment on the Cambridge phenomenon (1986:121) can be generic for the general history of technopolitan development;

> «it is important to make clear at once that we recognize that the Cambridge experience is peculiar to Cambridge and is not to be blindly applied elsewhere. Many diverse factors, the great majority of them specific to Cambridge and evolving over a long period of time, have come together to create a local business environment».

Even though many regions have tried to adapt the culture of Silicon Valley, they have missed several important points. The most thorough is what I name «the structural replicable error». Cultures can not be disembedded from their context and fabricated elsewhere. I borrow the analogy from biology: If we take a set of elements and try to insert them into a new ecosystem, we do not get an ecosystem plus the new elements – we get a totally new ecosystem with a completely new set of specifics. What cultural specifics that determine the innovative value of an area, as noted by Hall and Preston (1988), differ from case to case.

On the other hand we much watch ourselves for not reducing the culture of Silicon Valley or any other culturally popular area into a functional device, neither on the individual or the structural level. Social actors are neither culturally programmed to what they do nor are they enjoy total freedom in their actions. Structures and actors are not mutual opponents, but mutual complementarities (Bourdieu, 1977; Giddens, 1984; Bennett, 1995).

The Qualities of Cities

Cities have to an increasing degree become the central organizing unit of living, and innovative people move to urban regions attracted by certain characteristics. We can recall three reasons for this. Firstly, cities have the necessary physical proximity between all the links of major importance in the modern innovation matrix; finance, technology, talent, people, and markets.

Secondly we have the advantages of belonging in a cultural swirl – the nature and plenitude of social and cultural amenities that affect the quality of the urban environment – of the cosmopolitan city. Most successful are those cities attractive to different family settings and personal orientations, offering cultural stimuli for every possible lifestyle.

Thirdly, an institutional milieu that protects individual rights and is tolerant and inclusive toward diversity is priceless. Almost by definition, creative activities require freedom of thinking and expression and wide scope for experimentation. This is, from our findings in previous chapters, more likely to happen in cosmopolitan cities rather than

rural areas and cities alienating the less conventionally minded, due to their dense blending of technology, talent, and tolerant diversity.

Debunking Economics

The third pointer is how economics to an increasing degree unveil its limitations when it comes to analyzing innovation activities. I am not an economist by profession, and do not claim that we at any level should ignore the results from traditional innovation studies. I fully respect the leading innovation theorists, their knowledge and experiences.

But carving out tomorrow's innovation policies can not be the exclusive privilege of conventional textbook economists. We live in an emotional economy, where cultural circumstances are transcending the conventional wisdom of rational economics (Ridderstråle and Nordström, 2002).

Innovation perspectives appreciating cultural variables affect in particular the political economy. Recent debates the two latest decades of cultural and economic development in the US have provoked people from all camps, and even refueled the so-called «culture wars» (see Graff, 1992; Sennett, 1998; Florida, 2004b). A nation's economic performance is not only a matter of economic turnovers presented by its corporate giants, but just as much the ability to create new jobs for everybody under the threats of offshoring and downsizing – meaning harnessing the skills of its population and welcoming new immigrants. This in turn induces cultural challenges (see Putnam, 2000; Pink, 2001; Ehrenreich, 2001; Zachary, 2001).

There are also other problems associated with the Creative Class. Among these is the concern of growing social inequality, where this class tends to become a group of self-indulgent people, deeply absorbed in their own lives. It is easy to ridicule some of the most eccentric cosmopolitans as captives of trends, snobbish «metrosexuals» or mindless addicts of fashion and decaf lattes (Kahn, 1987; Brooks, 2001; Muschamp, 2003). But even worse is the tendency of its members becoming an economic elite (table 6.3; see also Stone, 2001). High prices on real estate and expensive living costs effectively block a number of entrance possibilities for the majority of the population to the most creative cities. The same goes for Tokyo, which by far is the most expensive city in Japan and in the whole of Asia.[3]

Table 9.1 Creativity, Quality of Life, and Cost of Living – Top 5

Region	*Creativity Index Rank*	*Quality of Life Rank*	*Cost of Living Rank*
San Francisco	2	2	4
Boston	4	4	9
Seattle	3	8	13
New York	20	1	1
Portland, OR	7	5	18

Sources: Florida (2004a); Mercer Human Resource Consulting, «Quality of Life Survey» (2004), and «Cost of Living Survey» (2004). Please see Appendix for details.

Thirdly, even though it is impossible to know beforehand who is going to be the next David Filo, Quentin Tarantino, Don DeLillo, or economics professor at Harvard, numerous social barriers, like large qualitative differences between schools, certainly hamper young people's right to equal opportunities. Moreover, receptiveness for diversity

does not necessarily mean that all groups are represented in the creative fabric. As several of Florida's interviewees responded: «a typical high-tech company looks like the UN [United Nations] minus the black faces» (2004a:80).

But in the end the Creative Class is more inclusive than traditional class concepts, which usually are defined in conflict to others, and represents moreover a powerful democratic asset for economic growth and social development. Creativity – the core of this class' economic modus operandi – defies gender, race, ethnicity, sexual orientation, and inherited wealth. Innovation and creativity are decreasingly elite activities located within small scientific or technological communities. They are instead normalized elements in everyday working life to an increasing number of people.

Introducing the Cosmopoles

My general interpretation of the results from these analyses is probably best captured in the title of this dissertation. The main reason for naming it *Cosmopoles* – which is short-hand for «cosmopolitan technopoles» – is historical: Evolving from conventional innovation theories and agglomeration economics, being functional clusters of buildings, capital, technological equipment and skilled labor, technopoles have transformed into «cosmopoles», representing multidimensional agglomerations of businesses, innovation, lifestyles and cultures.

It is no longer a matter of mere planning policies or coming up with the right list of archetypical technopolitan ingredients or innovation pointers. On the contrary, tomorrow's cosmopoles have to be understood within political, cultural and symbolic processes reaching far beyond the geographic and economic spaces they occupy (Logan

and Molotch, 1987; Castells, 1989; Massey et al., 1992; Zukin, 1995; Kearns and Philo, 1997). This strikes, as we have discussed, the magnitude of the Creative Class who prefers to live in cosmopolitan cities. We have seen how tolerance, diversity, technology and talent work together with traditional economic mechanisms in powering economic growth. This is connected to the quality of place and the ability to include all sorts of lifestyles in a community. And all of this is someway or another related to people.

People are still striving to be themselves, to find meaningful work, discover something to believe in, do things that *matters*, to live in communities that let them realize some of their dreams, validate their identities and live as complete people. The majority do that at chosen places for particular reasons. Florida sums it up neatly: «The bottom line is that cities need a *people climate* more than they need a business climate» (2004a:283).

And perhaps Marx (1959) was right after all, when he in *Capital* insisted on how the worker should possess the major assets of society and the critical means of production. In modern society, creative workers do so to a large degree – by having control over their own brains, and thus their creative powers. Creativity derives from cultural stimuli. Future innovation policies of cosmopolitan cities would therefore benefit from taking the combination of cultural and economic variables into more profound consideration when outlining technopolitan strategies.

Addressing these issues goes beyond the fact that they in the long run are healthy for economies. It is also stimulating a better understanding of cultural differences, a true necessity in our politically turbulent times.

Notes

[1] Readers familiar with the theme in this analysis perhaps wonder why the famous Italian region of Emilia Romagna (or «Third Italy») in north central Italy, which includes and extends out from the city of Bologna, is not included in this dissertation. In spite of its enormous economic success, which regularly places it among the fastest growing regions of Europe, Emilia Romagna rarely appears in any of the technopole literature. In fact, Piore and Sabel (1985), Putnam (1993), and Mosco (1997), all sees Emilia Romagna as a genuine *alternative* to conventional technopolitan development.

[2] I must emphasize that the concrete task of this dissertation has although *not* been to single out a particular model for preparing and maintaining the most attractive cultural environments in order to stimulate innovation, or giving victory to one single technopolitan strategy. Rather, the intentions were to tease out some preliminary clues on how such a culturally informed innovation model could be approached, based on the interactive domains of sociological and innovation studies.

[3] See Mercer Human Consulting, «Cost of Living Survey 2004» (available at http://www.mercerhr.com/).

Appendix

Methodological Explanations

Chapter 1

The term «Technopoles» covers a wide range of interrelated concepts. Kung (1997) collected 30 related concepts and terms, all seemingly used interchangeably in the literature without explicit definitions.

By technopoles Castells and Hall (1994) and I rubricate science parks, research parks, science cities, incubators, Brain Areas, intelligent sites/cities, clusters, regionalization of technology and science units, Techno Tanks, high-tech complexes, national technopolises, technobelt programs, and other different similar constructions that permute key elements like «Techno», «Science», «21st Century», «Park», «Plaza», «Polis», «zone» and «–topia», all as the generic name of *technopoles*.

Chapter 3

Table 3.1 is a collaboration of urbanization numbers from UNDPs *Human Development Report 2004*. Population data for 2002 and 2015 refer to medium-variant projections. The complete methodology can be found in pp. 251-82.

In table 3.2, the numbers are adapted from Norris (2004) and the combined World Value Surveys 1990-91 and 1995-97. The question asked was: «To which of these geographical groups would you say you belong *first of all*?»

- The locality or town where you live
- The state or region of the country which you live

- Your country [*The US, France*, and so on] as a whole
- The continent in which you live [*North America/Europe/Asia/Latin America*, and so on]
- The world as a whole

The complete methodology behind the surveys is presented at http://www.isr.umich.edu.

Chapter 6

Notes on the Tolerance Index: By creating a Tolerance Index based on four measures; the Gay Index, the Bohemian Index, the Melting Pot Index, and a measure of racial integration, Florida and his team used this to capture how integrated rather than separated a community is throughout its internal geography. This is possible by measuring how closely the racial percentages within each US Census Tract within a Metropolitan Statistical Area (MSA) compare to the racial composition of the MSA as a whole. Six racial/ethnic groups were taken into consideration: White, non-Hispanic; Black, non-Hispanic; Asian/Pacific Islander, non-Hispanic; other races (including mixed races), non-Hispanic; White, Hispanic; Nonwhite, Hispanic.

The «Child-Friendly Index» added in table 6.5 comparing Overall Rankings on the New Creativity Index (see table 6.3) and environments good for children, is based on the survey done by the non-governmental organization Population Growth, based in Washington D.C., and its report *Kid-Friendly Cities 2004* (available at http://www.kidfriendlycities.org/2004/) (formerly known as Zero Population Growth).

The organization determined grades (scores from A to E were given) by scoring each indicator (i.e. each data category, such as change in population or infant mortality rate) within a category using the same formula, in order to equitably compare all of the indicators to each other. The following formula was used to score each indicator:

$$\frac{\text{(City X Value – Lowest City Value)}}{\text{(Range of Values)}} = \text{City X Score}$$

City X Value = indicator value of city being scored
Lowest City Value = lowest indicator value in the data set
Range of Values = difference between the highest and lowest indicator values in the data set
Score = the higher the number, the better

This formula is used when high values are «positive» while low values are «negative» (e.g. the percent of residents with a high-school diploma). When high values are «negative» (e.g. infant mortality rates), the following formula was used to score the indicator value:

$$\textbf{1- } \frac{\textbf{(City X Value – Lowest City Value)}}{\textbf{(Range of Values)}} \textbf{ = City X Score}$$

Population Growth applied this formula to every city. Then, all the indicator scores within a category (Population, Health, Education, Community) were added up for each city. For example, the Community score was the sum of the scores of *percent of kids in poverty, percent of growth in urbanized land, rate of violent crimes,* and *recycling*. This total score was given a grade using a normal distribution curve. Cities' final ranks are based on their total scores. The city with the highest score ranked first, the city with the second-highest score ranked second, and so on.

In table 6.6 I have, in addition to Florida's indexes used in tables earlier in the chapter, included two other rankings; «Quality of Life» and «Metropolitan New Economy Rank».

The first ranking is taken from a survey done by Mercer Human Resource Consulting (available at http://www.mercerhr.com), which is based on detailed assessments and evaluations of 39 key quality of life determinants, grouped in the following categories: **Consumer goods** (availability of food/daily consumption items, cars, etc); **Economic environment** (currency exchange regulations, banking services,

etc); **Housing** (housing, household appliances, furniture, maintenance services, etc); **Medical and health considerations** (medical supplies and services, infectious diseases, sewage, waste disposal, air pollution, etc); **Natural environment** (climate, record of natural disasters); **Political and social environment** (political stability, crime, law enforcement, etc); **Public services and transportation** (electricity, water, public transport, traffic congestion, etc); **Recreation** (restaurants, theatres, cinemas, sports, and leisure etc); **Schools and education** (standard and availability of schools etc); **Socio-cultural environment** (censorship, limitations on personal freedom, etc). This survey is meant to represent values attractive to families and singles, the young and the elderly.

The second category is based on a study done in 2001 by Progressive Policy Institute (PPI) in Washington D.C (available at http://www.neweconomyindex.org). By looking at the 50 most populated metro areas in the US, PPI used 16 indicators divided into five categories capturing a broader measurement of the New Economy than Florida's calculations. Finally the metro areas were ranked after their total score on the five categories, which were: **1) Knowledge jobs**. Indicator measures jobs held by managers, professionals, and technicians; and the educational attainment of the workforce. **2) Globalization**. Indicator measures the export orientation of manufacturing. **3) Economic dynamism and competition**. Indicators in this category measure the number of fast-growing «gazelle» companies (companies with sales growth of 20 % or more for four straight years); the rate of economic «churn» (which is a product of new business start-ups and existing business failures); and the number of initial public stock offerings (IPO's) by companies in each metro. **4) The transformation to a digital economy**. Indicators measure the percentage of adults online; the number of «.com» domain-name registrations; the share of students using computers in schools; Internet backbone capacity; and number of providers of broadband telecommunications services. **5) Technological innovation capacity**. Indicators measure the number of high-tech jobs; the number of science and engineering graduates from area colleges and universities; the number of patents issued; expenditures on research and development at colleges and universities; and venture capital investments.

In table 6.7 I have added a «Coolness Index Rank» and a «Growth Company Rank». The first index is based on a study by the research team at *Forbes.com* (available at http://www.forbes.com/maserati/singles2004/) in 2004 of the 40 largest US metropolitan centers in six different areas: nightlife, culture, job growth, number of other singles, cost of living alone and coolness. Each metro is assigned a ranking of one to 40 in each category, based on quantitative data. Those ranks are then averaged, and readers' [of *Forbes Magazine*, paper version and online version] preferences are incorporated to determine the final rankings. The number of singles is based on the percentage of a metro's population above the age of 15 that has never been married.

The six categories were classified as follows: **1) Nightlife**: Nightlife is based on the number of restaurants, bars and nightclubs in each standard metropolitan area. A higher weighting is given to restaurants, with less importance given to bars and nightclubs. **2) Culture**: The cultural index is determined by the number of museums, pro sports teams and live theaters, as well as the university population, in each metro. **3) Cost Of Living Alone**: The proprietary Cost Of Living Alone Index is determined by the average cost of a metro area's apartment rent, a Pizza Hut pizza, a movie ticket and a six-pack of Heineken. **5) Job Growth**: Job growth rankings are determined by the projected percentage of job growth over the next five years for each metro. **6) Coolness**: Coolness is determined by an area's diversity and its number of creative workers (i.e., those whose jobs require creativity, such as artists, scientists, teachers and musicians).

The «Growth Company Index» (CGI) is a ranking produced by the National Commission on Entrepreneurship in *High-growth Companies: Mapping America's Entrepreneurial Landscape* (Washington D.C.) from 2001. Basically, it measures the location of high-growth companies across all business sectors within 394 regions (instead of focusing e.g. on high-tech companies). CGI weights the percentage of existing firms with high employment growth (at least 15 % for five years, or 100 % in five years) in the 1992-1997 period, and the percentage of firms that started in 1992 and 1993 and had at least 20 employees by 1997.

One methodological note, admitted by the authors, is that in this report, the usually well-performing Seattle-region is scoring low. This can partly be explained by

firms like Microsoft counting only as one company that grew at least 100 % over five years, even though it literally created thousands of new jobs.

Chapter 8

In table 8.1, where the numbers were extracted from the International Labour Organization (ILO) during August 2004 (http://laborsta.ilo.org), **«The Creative Class»** is equivalent to what is originally named **«Professional, technical and related workers»**. This category includes physical scientists and related technicians; architects, engineers and related technicians; aircraft and ships' officers; life scientists and related technicians; medical, dental, veterinary and related workers; statisticians, mathematicians, systems analysts and related technicians; economists; accountants; jurists, teachers; workers in religion; authors, journalists and related writers; sculptors, painters, photographers and related creative artists; composers and performing artists; athletes, sportsmen and related workers; and professional, technical and related workers not elsewhere classified.

Chapter 9

The «Cost of Living»-ranking in table 9.1 is based on a survey done by Mercer Human Resource Consulting (available at http://www.mercerhr.com). The survey measures the comparative cost of over 200 items in each location. These include housing, food, clothing and household goods, together with transportation and entertainment.

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